1912

HOISTING MACHINERY

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MONTREAL

MARSH & HENTHORN

LIMITED.

BELLEVILLE, CANADA.

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COLLECTION *of* CANADIANA

Queen's University at Kingston

MARSH & HENTHORN

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Car Irons

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Mining Skips and Buckets

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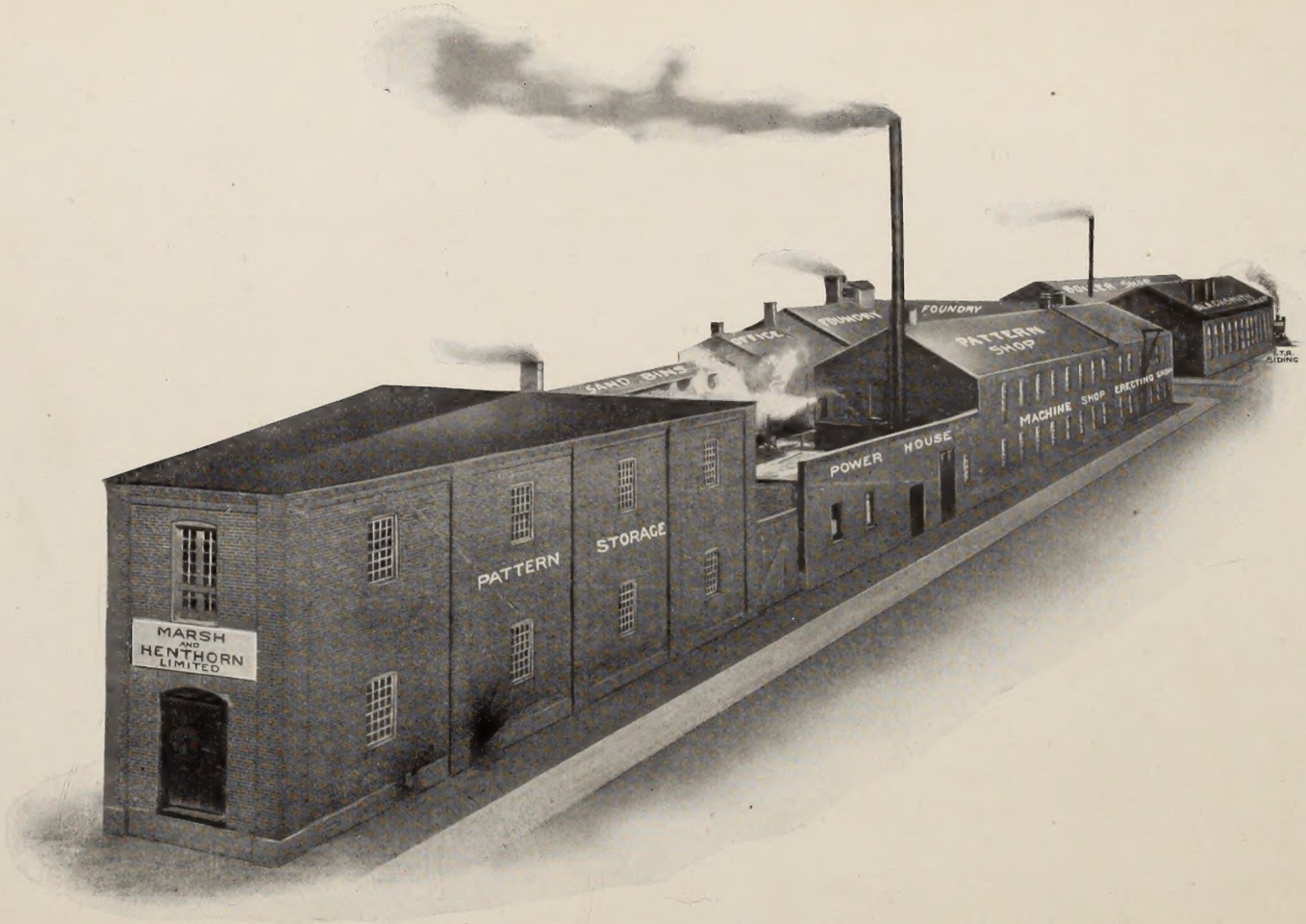


THE MARSH & HENTHORN PLANT AT BELLEVILLE, CANADA

WHERE THE MARSH & HENTHORN HOISTS ARE MANUFACTURED

The above is a good view of our works at the time this Catalogue went to press. Though the buildings are many and large they are not sufficient now for our business, and we hope it will not be many months before we are in our new shops on a site which will allow more room for the continued expansion of our business.

Announcement

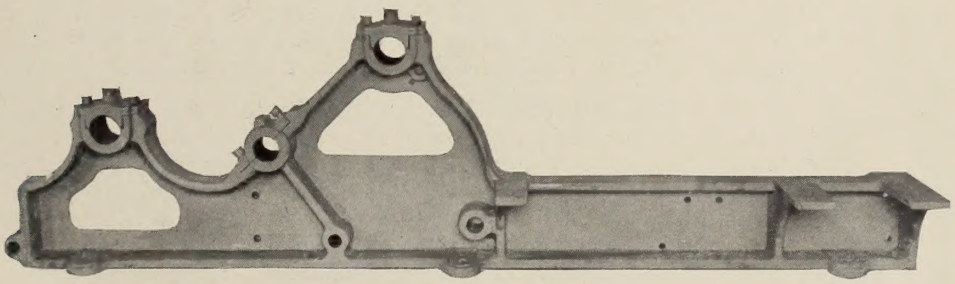
THE MARSH & HENTHORN Hoisting Engine has been on the market now for some fourteen years, and in that time has won its way to the front, until we can say now without boasting that it is known to be the most perfect Hoisting Engine made in Canada.

Much thought and money have been spent by us in the study of the Hoisting Engine business, and in perfecting the various details of construction and operation, with the result that we now produce a Hoist that is liked by the operators because it can be relied upon in its work, and because it runs easily and smoothly; and is also liked by the owners because of its durability and freedom from breakdowns and premature repairs.

Many Hoisting Engines must of necessity be used in camps—many miles sometimes hundreds of miles—from a machine shop or repair shop. They are frequently operated by unskilled engineers, and given a "rough and ready" usage which is sometimes a severe test of the rigidity and thoroughness of construction of the machine. Moreover, they are frequently overloaded, and called upon to do things or to stand strains not included in their catalogued powers.

The Marsh & Henthorn Hoisting Engines have been through all this, and have stood the tests of time and hard wear, and have won the admiration of their owners in all parts of Canada. This is due to the fact that the various parts of the Hoists are properly designed to withstand with safety any strain which their cylinders can bring upon them. Our aim has been to give the greatest possible strength, and to reduce the liability of breakdowns, without adding unduly to the weight of our Hoists.

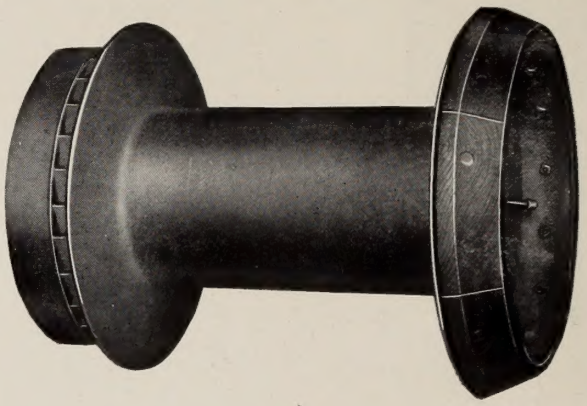
FRAMES.—Notice, for instance, the design of the side frame or bed plate of our standard double drum Hoist. Note that the shaft bearings are cast solid with the bed of the machine. What an improvement this is over the common method of bolting the bearings to the bed. This modern Marsh & Henthorn method is not only neater in ap-



paerance, but, what is of much more interest to the practical man, it is much stronger than the old design, as well as being a few pounds lighter. In a machine like a Hoisting Engine, in which the load is intermittent, and sometimes applied or released suddenly, it is desirable to have few parts, and the smallest possible number of bolts and nuts to shake loose. The man operating the machine has other things to do besides going around tightening nuts on loose bearings. Therefore we have cast the bearings and bed plate all in one piece and dispensed with the bolts and nuts.

DRUMS.—The Drum is, of course, the centre of interest, as it is the centre of activity in a Hoist, for all other parts of the machine are there just for the purpose of operating that drum. Therefore we have endeavored to design a drum that will have ample strength for the work; that can be operated with ease and certainty; that will have abundant capacity for the work for which it is intended; that will be, in short, a drum that can be absolutely relied upon to do its work well at all times.

This is a picture of our standard drum, as used on all of our standard Hoisting Engines and Belt Driven Hoists. It has extra long bearings on the shaft, which bearings extend inside the drum directly under the load. These bearings are large enough outside diameter to receive brass bushings if required. These brasses will be added to any drums at a slight extra cost, and if desired will be recessed for an oil reservoir. Note also the Brake and Ratchet. These are furnished standard on all drums, unless otherwise ordered. It is frequently desired to hold a load in suspension for a time, and in this case the dog and ratchet on the main fall drum will be found a great convenience, although they are not commonly supplied by all makers.

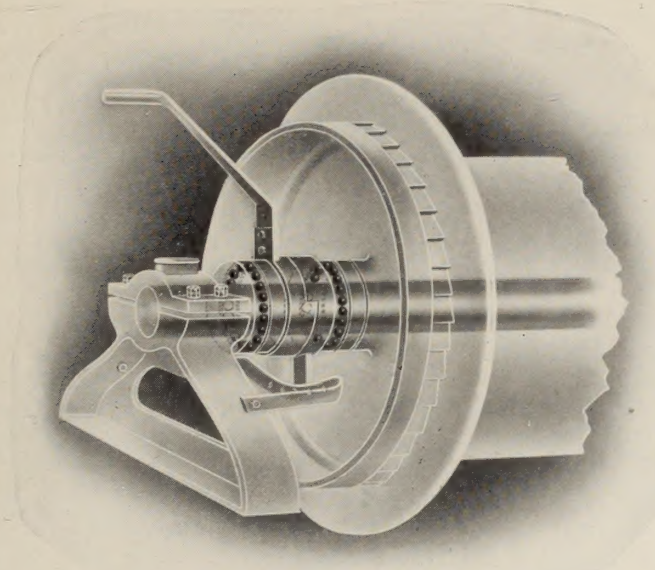


FRICTIONS.—The Drum Friction of the Marsh & Henthorn Hoist has been greatly improved by bolting the wooden friction blocks to a circular support instead of hexagonal, as formerly. This circular support is cast solid with the drum, and turned off concentric with the shaft. The iron friction on the gear is also turned concentric with the shaft after it is fitted and keyed in place on the shaft, thus making the two halves of the friction absolutely accurate. All the friction blocks are cut exactly the same by means of jigs and templates, are bolted on a mandrel and turned to the right diameter and bevel, and are then ready for attaching to the drum. It will thus be seen that the friction blocks are all exactly alike and interchangeable, and a new set may be bolted to an old drum by anyone, even if the drum happens to be on the edge of civilization.

DOG SPRING CATCH.—Note well also the spring steel catch or locking device for holding the dog back out of the way when not in use—another distinctive Marsh & Henthorn feature.

DUPLICATE PARTS.—This 'Duplicate Parts' system is used throughout our Hoists as much as possible. A list of all standard parts is given on pages 138-140, and when new parts become necessary, by reason of old age or accident, they can be ordered by number or name from this list. In ordering these new parts it is best to give both number and name, and also the shop number of the engine, to reduce the liability of misunderstandings. The shop number of every engine will be found stamped on the frame at the rear or boiler end.

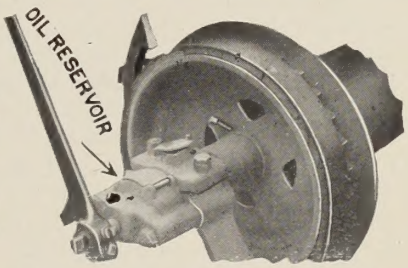
BRAKE.—The Brake for holding a load suspended, or for lowering, has been improved by us until we believe it to be absolutely perfect. It works easily, has a sure grip on the drum, and will hold any load that the machine will handle. **Never use the friction as a brake.** It is not intended for that purpose, and if used for lowering the load will wear out too quickly, and be costly to replace.



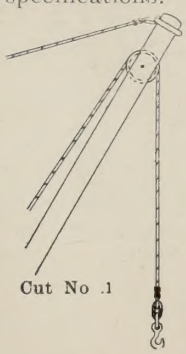
BALL BEARINGS—The Ball Bearing Cam Thrust shown herewith is used by us on all drum shafts that require a niggerhead or spool on each end, as for instance, the machines shown on pages 35 and 41, and is also recommended for use on all extra heavy duty engines. Where so used it will in all cases be considered an extra, and will be charged as such. On heavy engines this style of thrust works easier than the screw thrust, and also locks automatically in position when the frictions are engaged.

IMPROVEMENTS.—The illustrations in this catalogue show all our most recent improvements up to the time of going to press. Further changes or improvements will be made from time to time as may be necessary to keep up with the constantly changing methods of work in all fields of constructional activity. We purpose to continue making the best Hoist, no matter how times or methods may change in the days to come after this catalogue leaves the press.

THRUST PARTS.—The Thrust Nut and Pin of a Hoist are small, but yet vital parts, as on their perfect working depends much of the success of the operation of the whole machine. Every friction drum manufactured by us now has the improved self-oiling thrust nut shown herewith. As will be seen, the nut forms an oil pocket or reservoir, in which the thrust screw and thrust pin are constantly submerged in oil, ensuring perfect lubrication, and therefore perfect operation of these important parts.



CAPACITIES.—All the capacities of Hoists given in this catalogue are the weights the Hoist will lift on a single line, as in accompanying Cut No. 1. If the derrick is roped with a double line, as shown in cut No. 2, the Hoist will lift just double the weight given in the tables. If the derrick is roped with three lines, as cut No. 3, the Hoist will lift three times the catalogued load; and if it is roped with four lines, as in cut No. 4 herewith, the Hoist will lift four times the weights listed in the tables of specifications.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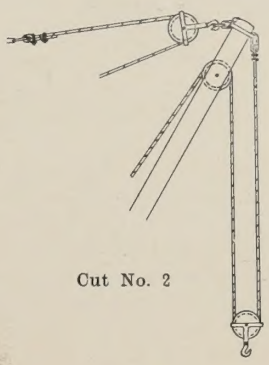
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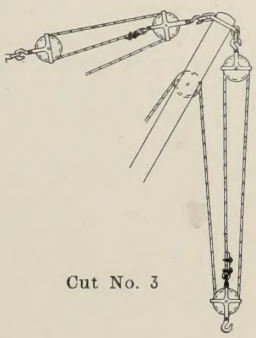
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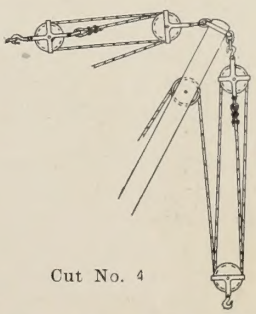
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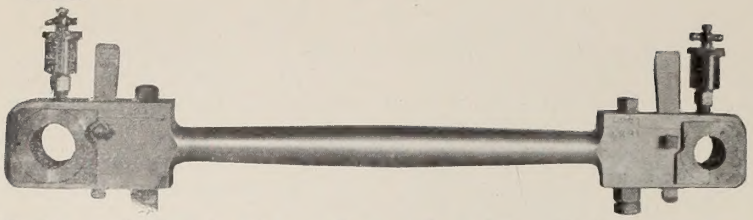
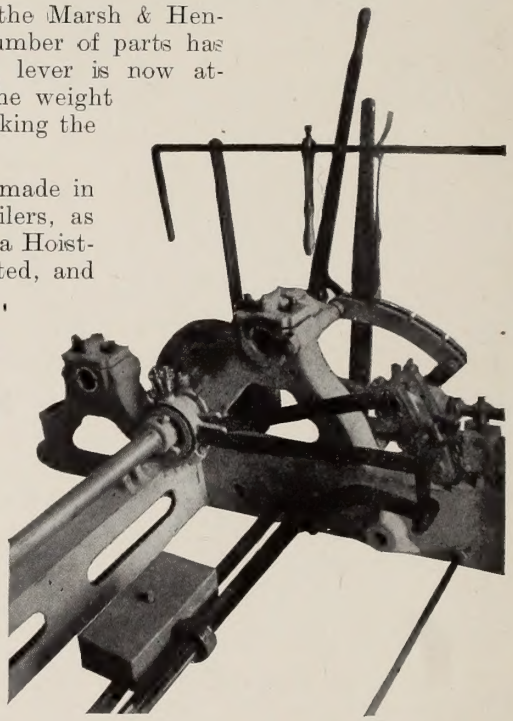


THE CONNECTING ROD used on the Marsh & Henthorn Hoist is not a cheap rod to make—in fact it is probably as expensive a design as we could have selected, but it is also the **best design,** and that is why we have selected it. It is to be found on all of the Marsh & Henthorn Hoisting Engines, whether large or small.

CONVENIENCE OF OPERATION.—It will be noticed by an examination of the photographs reproduced in this book that all the operating levers and boiler fittings are grouped within easy reach of the operator, and arranged so he can get at them without putting himself in an awkward or constrained position. The steam gauge is placed low down where it can be seen quickly. The water glass can be watched by the engineer without leaving the drum levers. The injector is also placed near the operator, so one man can attend to the whole engine alone with ease, without quitting his post except to fire up.

THE REVERSING MOTION used on the Marsh & Henthorn Hoist is simple and compact. The number of parts has been reduced to a minimum. The operating lever is now attached directly to the reversing shaft. The weight of the links is counterbalanced, as shown, making the reversing operation easy.



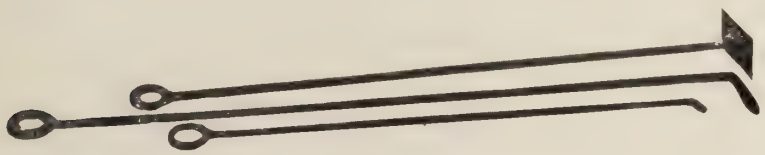
BOILERS.—A new departure has been made in the manufacture of our Hoisting Engine Boilers, as will be readily appreciated when we say that a Hoisting Engine built by Marsh & Henthorn Limited, and equipped with one of our Boilers manufactured since 1910, can be used in any part of Canada. It is an unfortunate fact that there is at present no Dominion law or regulation regarding the construction of Boilers. The consequence of this is that each Province is left free to formulate such rules and regulations as please the fancy of the various Provincial experts. As a natural result there is a great diversity in the rules of the nine Provinces, and a boiler manufactured to suit one Province will be rejected by the Province next door. For instance, at the time this catalogue is issued, a boiler built exactly to British Columbia rules would not be accepted in Alberta or Saskatchewan, and one which pleases the authorities in Ontario or Quebec would be rejected by all three of the far Western Provinces.

To avoid all this confusion and uncertainty of design we have spent considerable money and time in the preparation of designs for our Boilers that would incorporate all the ideas of the many Provincial law-makers. We have been successful in this, and the designs of our Hoist Boilers are now accepted, approved and on file with the several Provincial Governments interested, and as a result our Hoist Boilers may now be shipped to any part of Canada and be used there up to their full catalogued capacity.

BOILER BRACES.—The attachment of the Boiler Braces is, we believe, an exclusive feature with the Marsh & Henthorn Hoist. The style of connection is clearly shown in the many photographs of Hoist Boilers reproduced in the following pages. By the use of this connection it is possible to uncouple the boiler from the hoist at any time without affecting the tightness of the boiler. The lug to which the brace is fastened is rivetted to the shell, and not screwed or bolted in the ordinary way.

TESTS.—All of our standard Hoist Boilers are made for one hundred pounds working pressure, and are tested to one hundred and fifty pounds under a cold water, or hydraulic test. They are then fired up and tested under their own steam, and with all valves and fittings in place, to ensure that everything is sound and in good working condition before shipment. The boiler is then kept under steam, and near the blowing-off point, for several hours, and no boiler leaves our shops until we know it is sound and in good condition.

Every Engine is also thoroughly tested under steam in our shops for several hours before shipment, and all working parts are tried, and proven to work correctly.



FIRE TOOLS.—A full set of Fire Tools is supplied with every Hoist Boiler, as shown in accompanying photograph.

BOILER CAPACITY.—Our Hoisting Engine Boilers are all of ample capacity for operating the Hoist for which they are designed, under normal working conditions. When steam is desired for other purposes than running the Hoist a larger boiler will usually be necessary, and can be supplied at a slight advance in cost. If a higher working pressure than one hundred pounds is desired a heavier boiler can be furnished, but will require longer to deliver, as they are not carried in stock.

TO CLEAN BOILERS.—Every facility is given for the thorough inspection and cleaning of our boilers by the engineers in charge. Eight mud ports or hand holes are provided, four at the line of the lower tube sheet, and four at the bottom of the water leg. A brass plug is also placed under the fire door, in accordance with the regulations of some of the provinces. In addition to all these openings, we place one large hand hole, as shown on page 18, at the theoretical fire line in all boilers thirty-six inches or less in diameter, and in boilers exceeding this size we place two of these large openings.

All Brass Goods on our Hoist Boilers are of designs approved by the Provincial authorities having laws governing these matters. All Water Gauges and Gauge Cocks are three-quarter inch size. The Injectors also are of ample size, and the best make for the purpose.

IN CONCLUSION.—It has given us great pleasure, all the years we have been in business, to retain our old customers and to receive their orders from time to time as their work increased and more machinery became necessary. Many large users of Hoisting Machinery use the Marsh & Henthorn Hoist exclusively in all their work. The list of users of our Hoisting Machinery is steadily increasing year after year, until now these machines are to be found in use in all kinds of construction and excavating work in all sections of Canada. The increasing demand for these Hoists assures us that a good machine is appreciated, and that quality counts even more than first cost. We do not claim that the Marsh & Henthorn Hoist is the lowest priced machine in the market. We do not care to enter that kind of a competition. But we do claim that the price is fair and reasonable, and that we have yet to find the Hoist that will do better work.

STANDARD DOUBLE CYLINDER, DOUBLE DRUM HOISTING ENGINE.

This is our standard Hoisting Engine, the machine on which our reputation has been largely built. It is of the well known type so universally liked among contractors because of the great variety of uses to which it can be put, and its general adaptability for nearly all classes of work. The type is so well known that it is not necessary for us to even attempt to enumerate the great variety of uses to which it can be put. But there are many distinctive features about this machine, as we make it, and which are described in the opening pages of this catalogue, which make it, we believe, the best machine of its type in the Canadian market, and we recommend anyone interested to study these opening pages carefully.

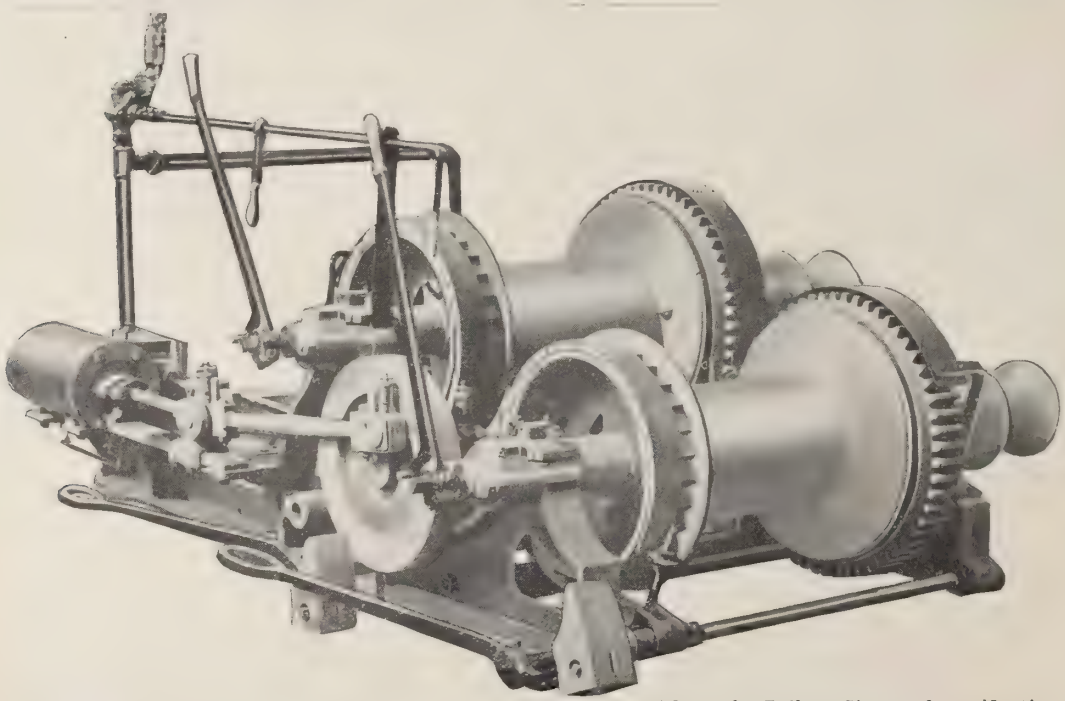
This machine is, of course, designed primarily for use with a derrick, the front drum for handling the load, and the rear drum next the boiler for raising and lowering the boom, but besides this it can be, and is used for nearly every purpose for which a Hoist can be used.

The sizes of drums scheduled are standard. Other sizes are listed on page 45, also 58-61.

Pages 10 and 11 show this same machine fitted with our improved reversing link motion as illustrated on page 6. The Boom Swinging device to fit this machine is illustrated on pages 12 and 13.

H. P. usually Rated	Cylinders		Drums		Boiler				Bed Plate		Weight Hoisted with single line LBS.	Hoisting Speed per Minute, FEET	Code Word with Boiler	Code Word without Boiler
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Diameter, inches	Height, Inches	No. of 2 in Tubes	Length of Tubes	Width, inches	Length, inches				
10	5	7	9	15	30	66	42	36	41	66	2600	160	Homebase	Eagle
15	6½	8	12	20	33	84	60	48	47	84	4000	160	Homeless	Earth
20	6¾	10	12	22	37	90	72	54	49	91	5500	150	Homely	Earthborn
25	7	12	12	24	40	90	88	54	53	100	7000	140	Homemade	Earthly
32	8	12	14	28	44	96	100	60	60	110	8000	140	Homer	Earthquake
40	9	12	16	30	48	102	124	60	63	117	10000	140	Homerule	Earthwork
50	10	12	16	30	54	114	154	72	64	117	12500	140	Homing	Earldom

Size of Cylinders	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Estimated shipping weight, with Boiler	4200	6600	7800	9000	11700	16600	19200
Estimated shipping weight, without Boiler	2600	4400	5100	5800	8000	12000	13000
Suitable weight of Pile Driving Hammer	1500	2500	3600	4800	6000	8000	9000



This is the same machine as shown on opposite page, but without the Boiler. Sizes and specifications as tabulated above.

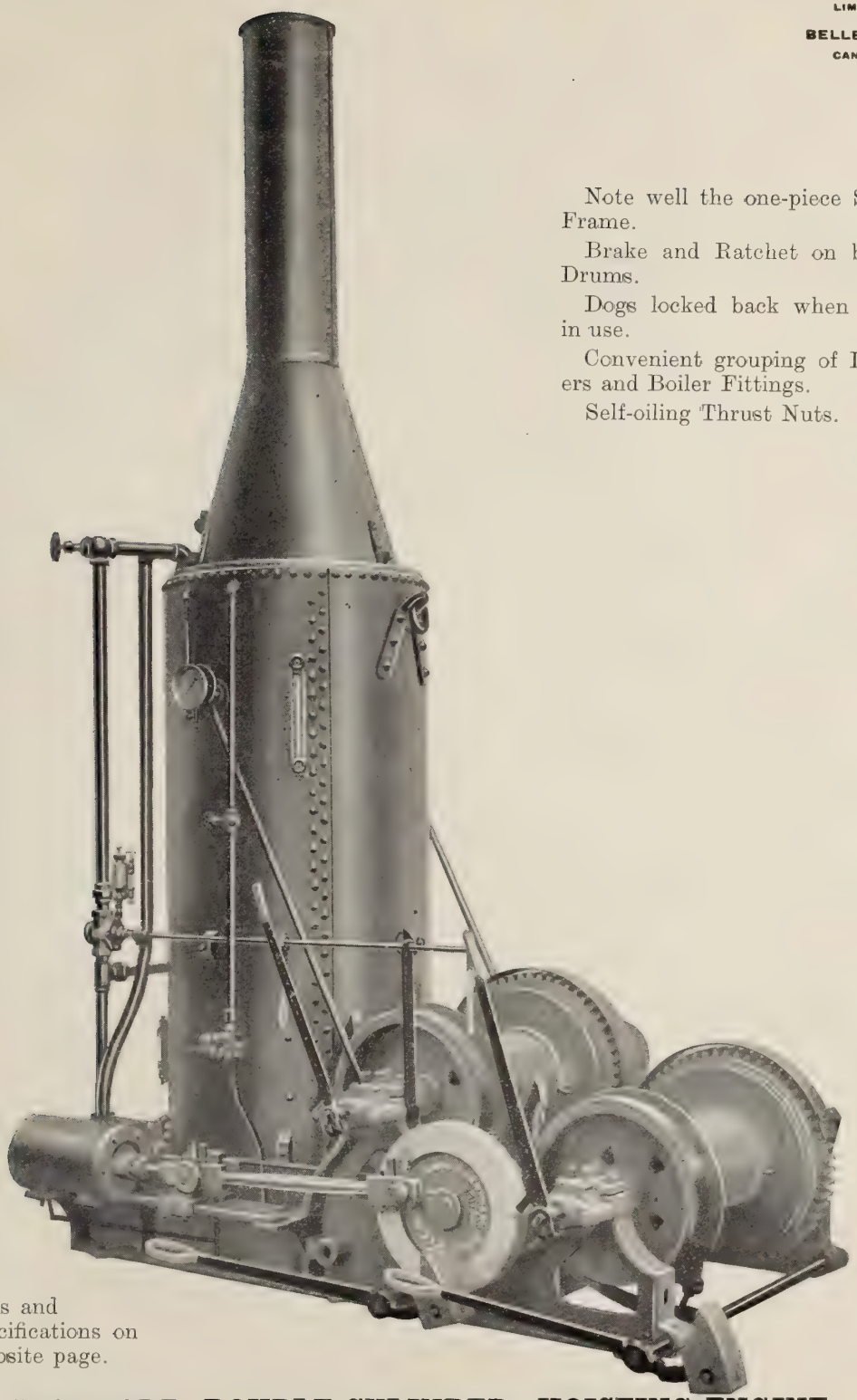
Note well the one-piece Side Frame.

Brake and Ratchet on both Drums.

Dogs locked back when not in use.

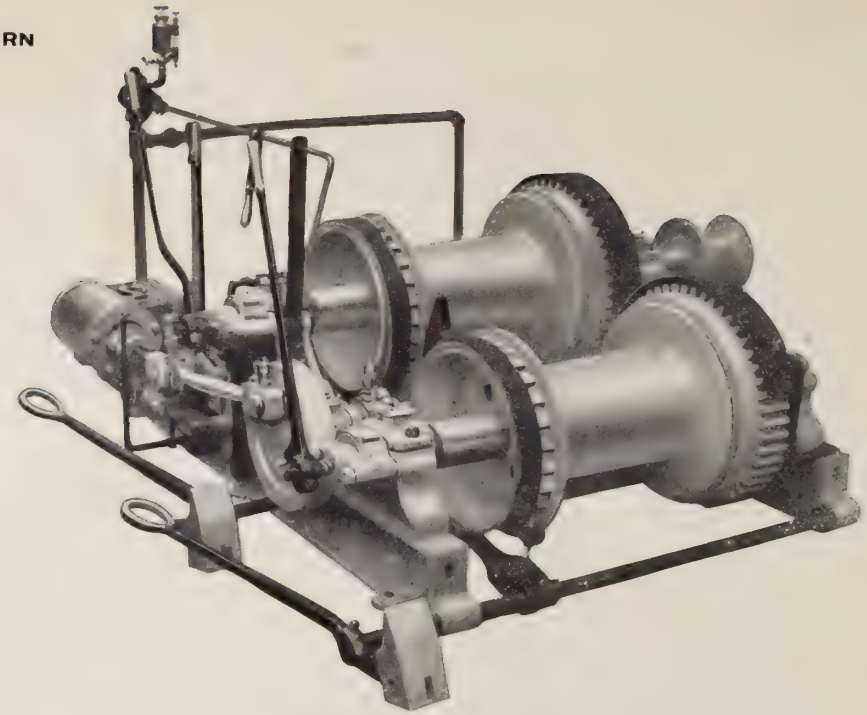
Convenient grouping of Levers and Boiler Fittings.

Self-oiling Thrust Nuts.



Sizes and Specifications on opposite page.

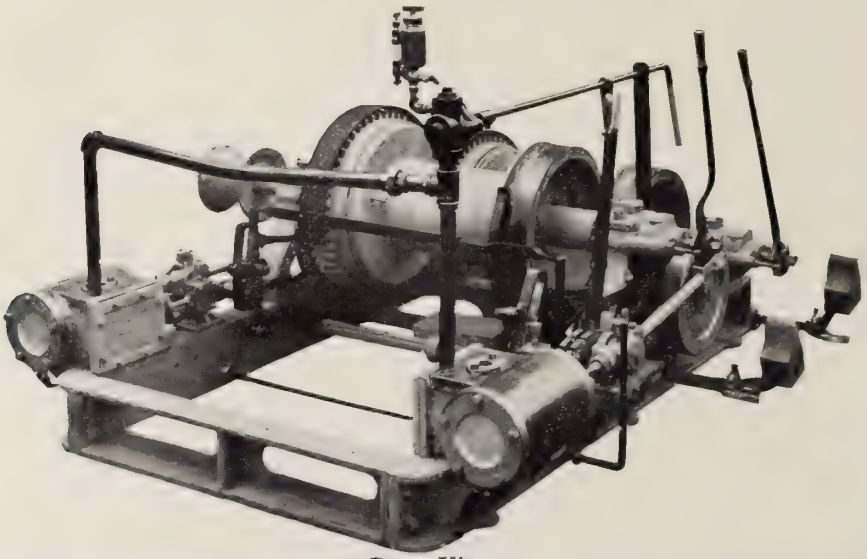
STANDARD DOUBLE CYLINDER, HOISTING ENGINE.



Front View.

STANDARD REVERSIBLE DOUBLE CYLINDER, DOUBLE DRUM HOISTING ENGINE

Without Boiler.

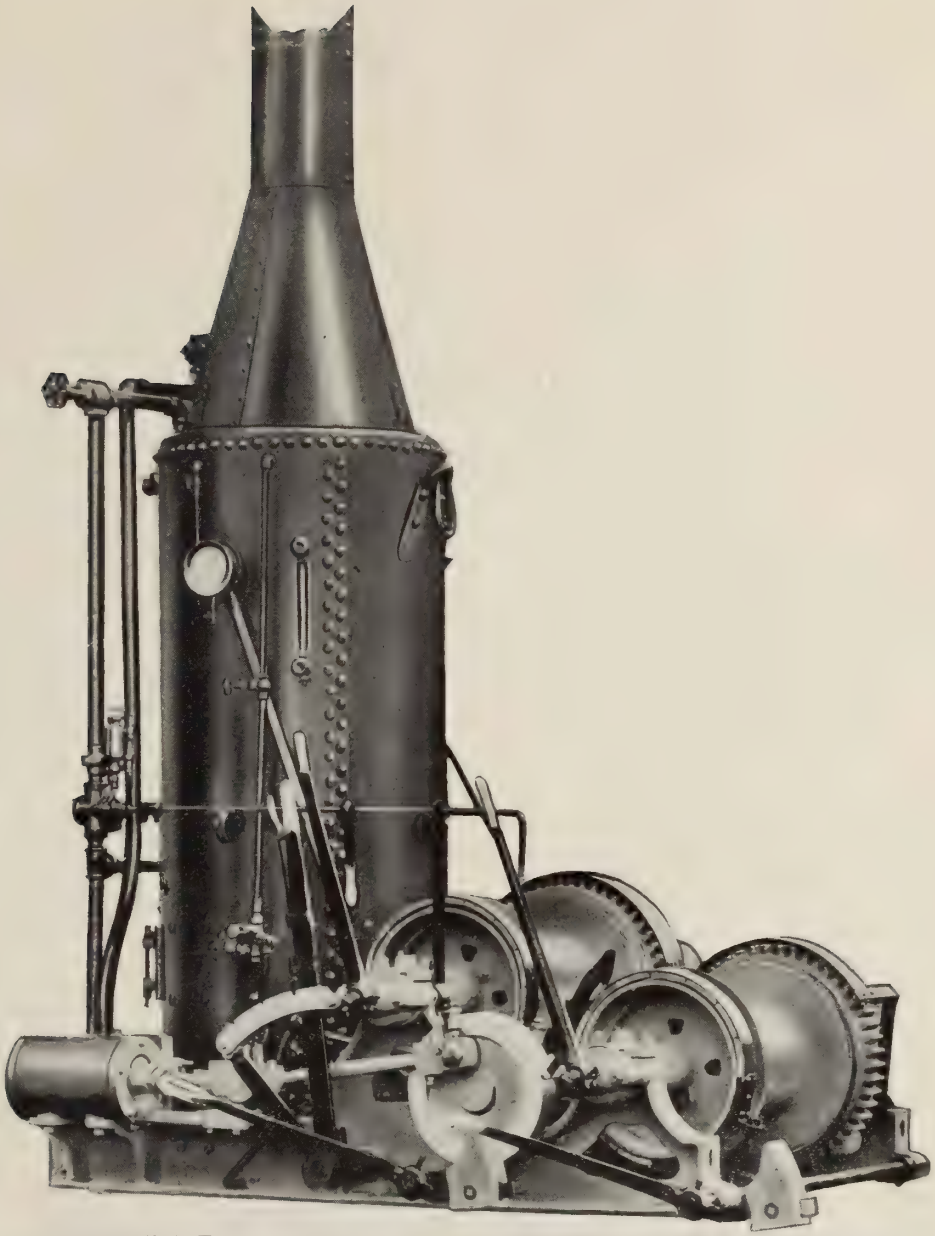


Rear View.

STANDARD REVERSIBLE DOUBLE CYLINDER, DOUBLE DRUM HOISTING ENGINE

Without Boiler.

Sizes and specifications for above machines are given on page 8.
Code words for telegraphic orders for above machines are given on opposite page.

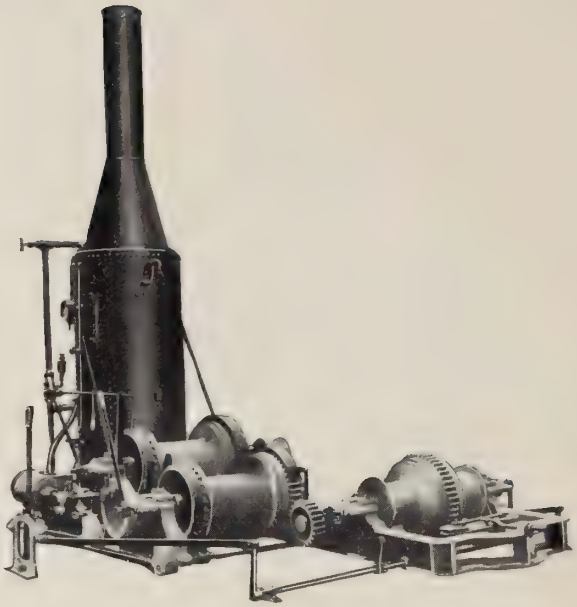


REVERSIBLE DOUBLE CYLINDER, DOUBLE DRUM HOISTING ENGINE

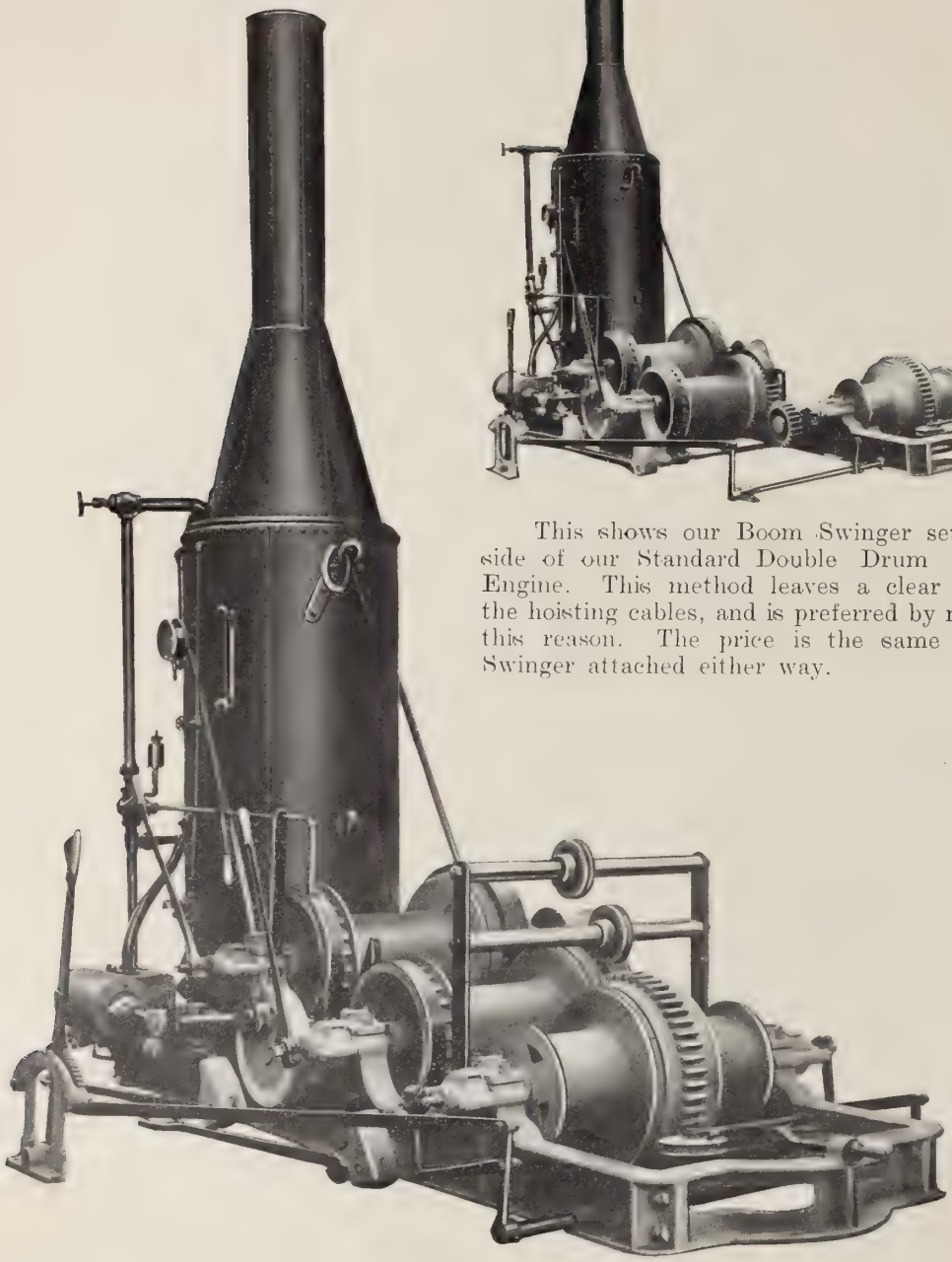
Sizes and specifications of the above machine on page 8.

TELEGRAPHIC CODE WORDS FOR DOUBLE DRUM REVERSING ENGINES

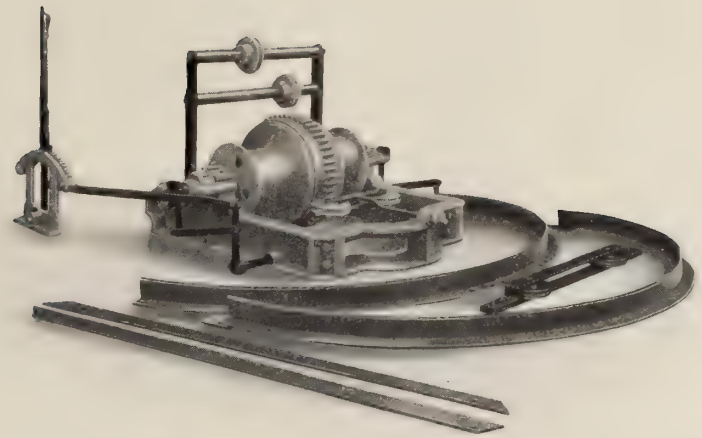
Size of Cylinders.....	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Code Word with Boiler.....	Homicide	Homerun	Homesick	Homespun	Homestead	Homeward	Homo
Code Word without Boiler...	Earl	Earring	Earwig	Eclipse	Eczema	Exorcism	Exotic



This shows our Boom Swinger set at one side of our Standard Double Drum Hoisting Engine. This method leaves a clear way for the hoisting cables, and is preferred by many for this reason. The price is the same for the Swinger attached either way.



This shows our Boom Swinger attached to the front of our Standard Double Drum Hoisting Engine. This is a neat and compact arrangement, but necessitates carrying the hoisting cables over the Swinger, for which Leader Sheaves, or 'fleeting sheaves' are provided, as shown.



BOOM SWINGER.

The above is an illustration of our standard Boom Swinging Device, together with the Bull Ring, or Derrick Swinging Circle, and its suspension rods and guide sheaves, which are included with the Swinger every time, unless otherwise ordered. On page 14 will be found an illustration showing the method we recommend of attaching this Bull Ring to the Derrick, and on page 15 is a sketch showing the proper method of roping up the Swinger Drums.

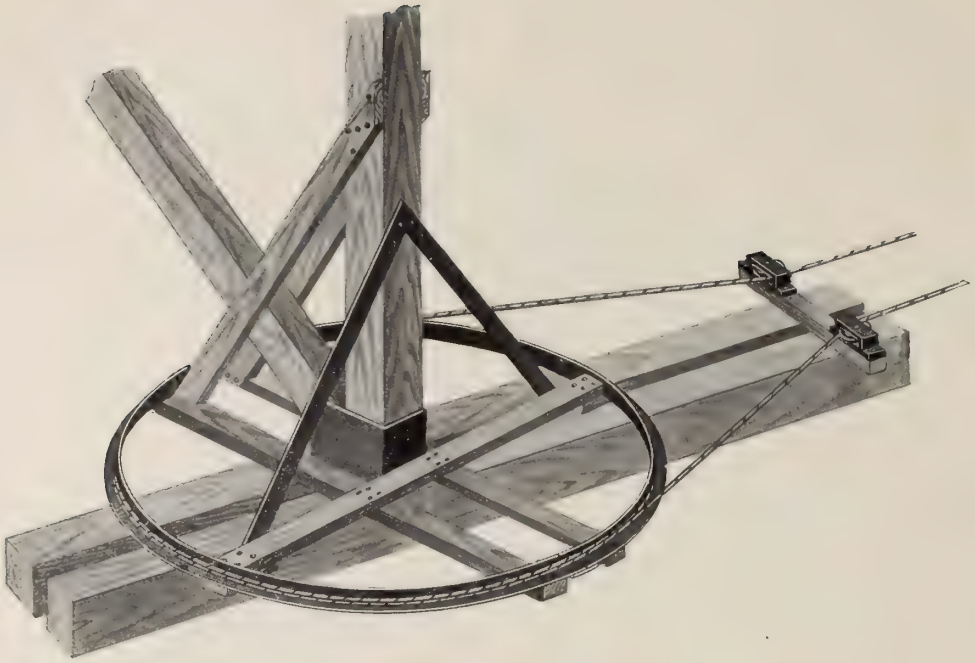
This is, we believe, the most perfect Boom Swinging device on the market today. For simplicity, for quickness and ease of operation, we have seen nothing to equal it. It can positively be depended on at all times to swing the boom quickly to the desired point, and to stop it and hold it there. A good operator can hoist and swing at the same time with this Swinger, so that when ready to lower the load it is over the place where it is to be deposited.

We can supply this Swinger to fit any Hoist we ever made or to fit any Hoist made by any other factory on receipt of certain dimensions.

On the opposite page we show two methods of connecting this Swinger to the Hoist.

Specifications.

Size of Cylinder on Hoist	Swinging Drums		Bed Plate		Diameter Bull Ring Supplied for Mast	Estimated Shipping Weight LBS.	Code Word Front Position	Code Word Side Position
	Diameter, inches	Length, inches	Width, inches	Length, inches				
5 x 7	9	9	41	45	8 feet	800	Herald	Habitant
6½ x 8	12	11	47	58	9 feet	2000	Heroic	Haddie
6¾ x 10	12	11	49	59	10 feet	2000	Hero	Halation
7 x 12	12	11	53	59	10 feet	2000	Heroine	Hairdresser
8 x 12	12	14	60	68	10 to 16 feet	2500	Heroism	Halberd
9 x 12	14	14	63	71	10 to 16 feet	2500	Heronry	Halcyon
10 x 12	14	14	64	71	10 to 16 feet	2700	Herring	Halesia



METHOD OF FITTING UP BULL RING.

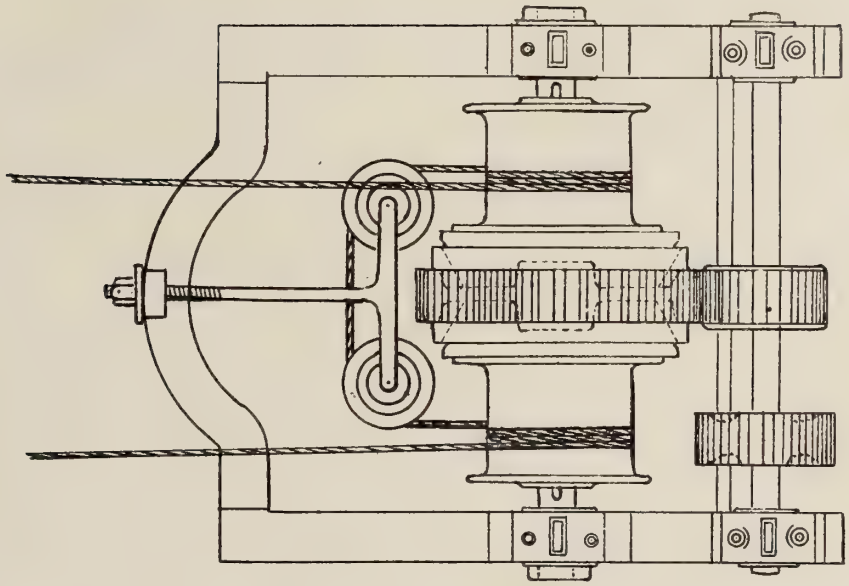
On the preceding page we give an illustration of the Bull Ring, Suspension Rods and Guide Sheaves that we furnish with every Boom Swinger. The above illustration shows these parts assembled in their correct positions and connected to the derrick in the manner which we recommend. The cable, as will be seen, is passed twice around the bull ring, then through the guide sheaves to the swinger.

The illustration on the opposite page shows in a general way the method of roping up the swinger for connecting with derrick. As will be seen, the cable is wound three or four times around one drum, then over the two sheaves on to the other drum. It is given three or four turns around this drum also, and then led around the bull ring as shown above. The two ends of the cable are then bolted to the bull ring by hook bolts. The slack in the cable is taken up by means of the nut on the end of the rod to which the sheaves are attached. As this bolt fits quite loosely in the frame it permits of considerable lateral movement to the sheaves, allowing them to sway back and forth as the cable feeds from one end of the drum to the other.

The operating levers are not shown in this illustration, but their positions are shown in the photographs on page 12, 18 and 19.

We value correspondence relating to hoisting machinery and appliances, and shall be pleased at any time to give customers our best advice and judgment regarding points about which they may be in doubt or difficulty.

METHOD OF ROPING UP SWINGER.



For full description see opposite page.

USEFUL TABLE.

Showing the length of rope that will coil in one layer on one foot, or twelve inches in length, of our standard sizes of drums. From this table it will be easy to ascertain the amount of rope or cable that any length of drum will accommodate.

Diameter of Rope or Cable in Inches.	Diameter of Drums in Inches.											
	9	12	14	16	18	20	24	26	30	36	40	48
	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet
⅜	78·54	103·67	120·43	137·18	153·94	170·69	204·20	220.96	254·47	304·73	338·25	405·25
½	59·69	78·54	91·11	103·67	116·24	128·81	153·94	166·50	191·64	229·34	254·47	304·74
⅝	48·38	63·46	71·85	83·57	93·62	103·67	123·78	133·83	153·94	184·09	204·20	244·42
¾	40·84	53·41	61·78	70·16	79·54	87·92	103·67	112·05	129·64	153·94	170·69	204·20
1	31·42	40·84	47·12	53·41	59·69	65·97	78·54	84·82	97·39	116·24	128·81	153·94
1¼	25·86	33·30	38·33	43·35	48·38	53·41	63·46	68·49	78·54	93·62	103·67	123·78
1½	21·99	28·27	32·46	36·65	40·86	45·03	53·41	57·59	65·98	79·37	86·92	103·67

MULTIPLE DRUM HOISTS.

On the opposite page we show a photograph of one of our standard three drum non-reversing Hoisting Engines, and on pages 18 and 19 we show other photographs of the same style machine fitted with our Boom Swinger attached in two different positions. These machines are used extensively in connection with clam shell and orange peel buckets, where two drums are required for operating the bucket, and the third drum for raising the boom. There are also many other uses to which a machine of this nature can be put, which are well known to contractors, for instance, if the engine is fitted with reversing link motion the front drum can be used for swinging the boom.

FOUR DRUM HOISTS.—We list below our standard four drum Hoisting Engine, but do not show a photograph, as its design is similar to the three drum machine. This four drum Hoist is convenient for operating two derricks with the one machine, or for any other work requiring four lines.

When so desired, the operating levers of these Multiple Drum Hoists can be arranged in quadrants on a stand at the rear of the machine, at a small additional cost.

Sizes and Telegraphic Codes for our Standard Double Cylinder Three Drum Hoisting Engines.

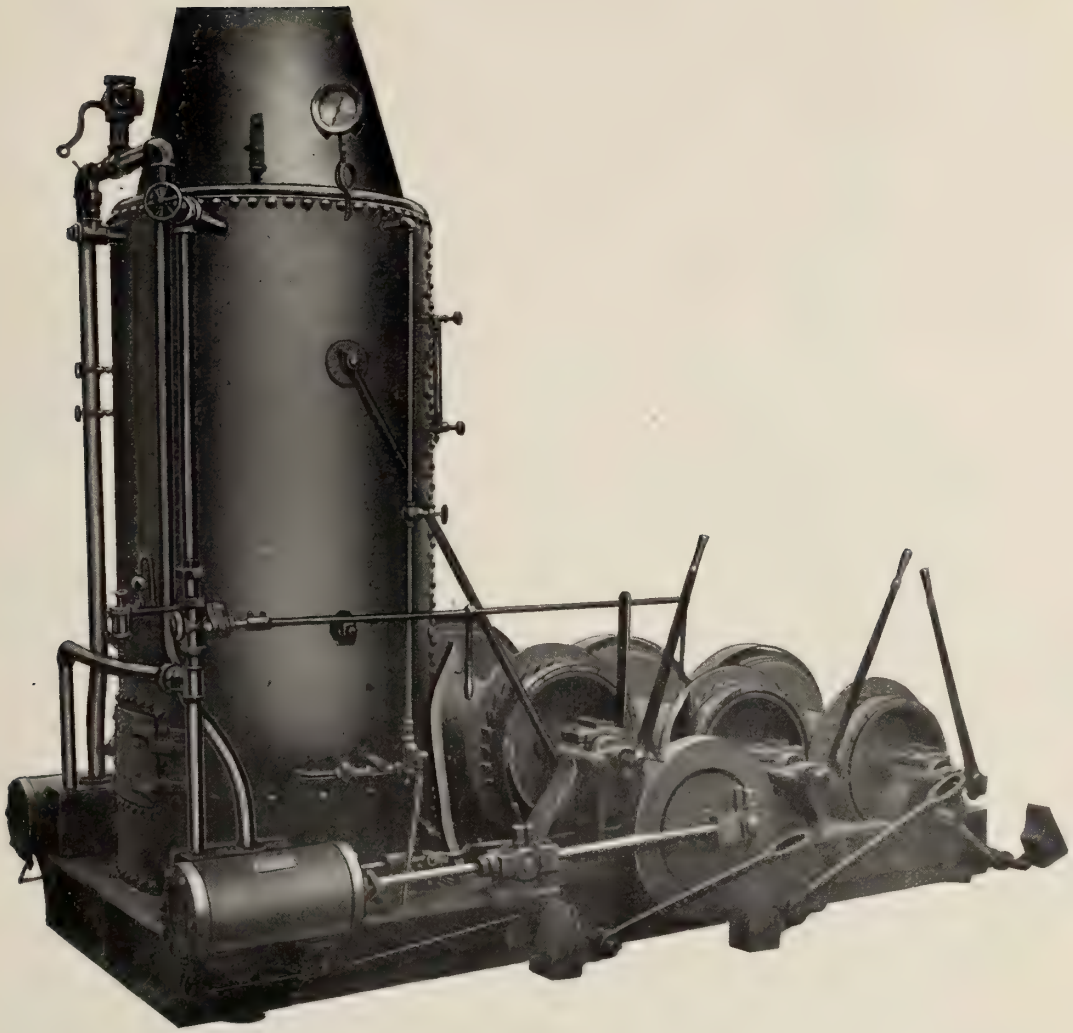
Capacities of Hoists, Boilers, etc., same as for two drum machine listed on page 8.

Size of Cylinders	Horse Power	Weight lifted on single line	Non-Reversing Engines		Reversing Engines	
			Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
5 x 7	10	2600	Hanuman	Ealdorman	Hapuka	Easel
6½ x 8	15	4000	Haoma	Eame	Haranut	Eavesdrop
6¾ x 10	20	5500	Hapalote	Earache	Harari	Ebenad
7 x 12	25	7000	Haplite	Eardrum	Hardhead	Ebenezer
8 x 12	32	8000	Haplomi	Earlet	Hardim	Ebionite
9 x 12	40	10000	Haptic	Earlship	Hardtack	Eblis
10 x 12	50	12500	Harakiri	Earmark	Harebell	Eboe

Sizes and Telegraphic Codes for our Standard Double Cylinder Four Drum Hoisting Engines.

Capacities of Hoists, Boilers, etc., same as for two drum machines listed on page 8.

Size of Cylinders	Horse Power	Weight lifted on single line	Non-Reversing Engines		Reversing Engines	
			Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
5 x 7	10	2600	Harebrain	Ebraike	Haricot	Ecarte
6½ x 8	15	4000	Hairlip	Ebriety	Harigals	Ecaudata
6¾ x 10	20	5500	Harem	Ebrillade	Harish	Ecbasis
7 x 12	25	7000	Haremlik	Ebulum	Harlan	Ecballium
8 x 12	32	8000	Harengus	Eburin	Harlech	Ecbole
9 x 12	40	10000	Haresfoot	Ecaille	Harlequin	Eccope
10 x 12	50	12500	Harfang	Ecardines	Harlock	Eccrisis



STANDARD DOUBLE CYLINDER, THREE DRUM HOISTING ENGINE

Sizes and telegraphic code words on opposite page. Full detail specifications same as double drum list on page 8.

Above illustration shows Hoist rigged for operator to stand between the two forward drums. The illustrations on the next two pages show the levers arranged for the operator to stand between the two rear drums. We will arrange these levers whichever way the customer prefers, but unless otherwise instructed will ship the machine with levers arranged as shown on the next two pages.

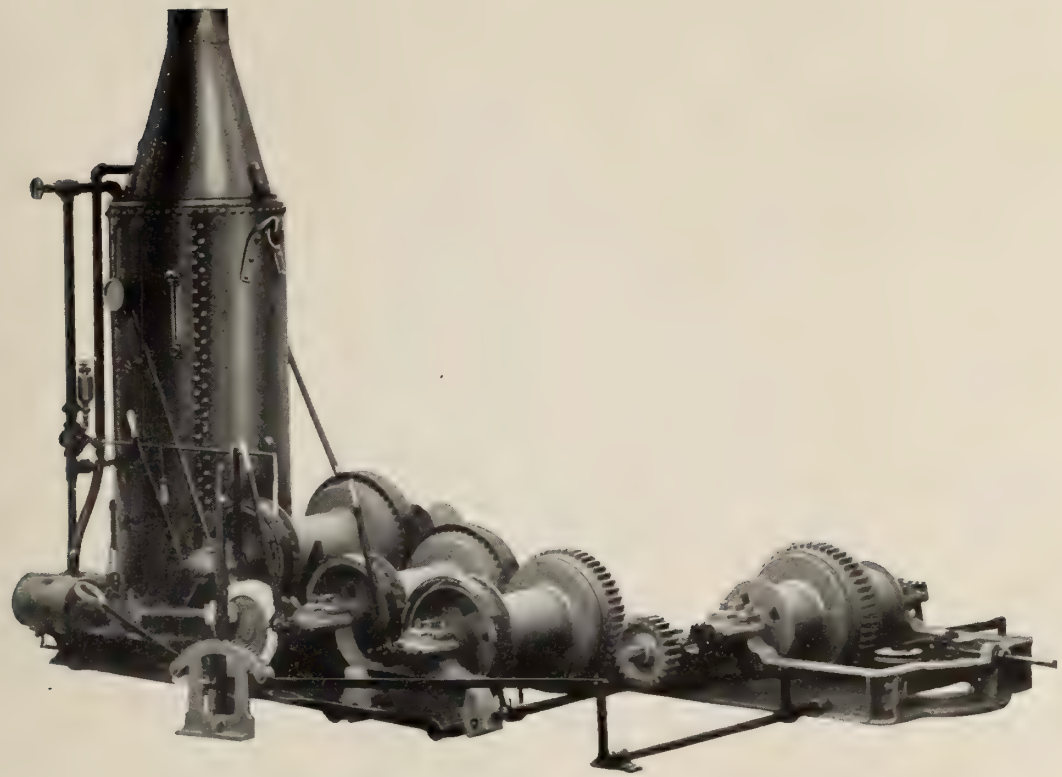
STANDARD THREE DRUM HOISTING ENGINE

With Swinger in Front, and Boiler and two Cylinders.

This is the same style of machine as shown on page 17, but fitted with our improved Boom Swinger in front. This makes a very compact rig, and a convenient one to operate, as the levers are all assembled within easy reach of the engineer in charge.

The above photograph was taken from one of the larger sized machines, and the boiler is provided with two of the large hand-holes as described on page 7.

The three Leader Sheaves shown carry the main cables over the Swinger without any chance of fouling.



STANDARD THREE DRUM HOISTING ENGINE

With Swinger at Side, and Boiler and two Cylinders.

This also is the same style of machine as shown on page 17, but fitted with our Standard Boom Swinger set off at the side to avoid leading the main cables over the Swinger Drums. As in the picture on the opposite page, all the levers are grouped within easy reach of the operator. This method of connecting the Swinger is greatly preferred by some engineers, even though the Hoist does occupy considerably more floor space.

Our standard four drum machines can also be fitted with this Boom Swinger in either front or side position.

We manufacture all the boilers we use on our Hoisting Engines, as explained in the opening pages of this book. We fire them up and keep them under steam and near the blowing-off point for several hours before they leave our factory. We guarantee all our boilers to be sound and tight when they are shipped, and we remedy at our own expense any defects of construction that may develop within a reasonable time after the boilers leave our shops.

STANDARD DOUBLE CYLINDER, SINGLE DRUM HOISTING ENGINE.

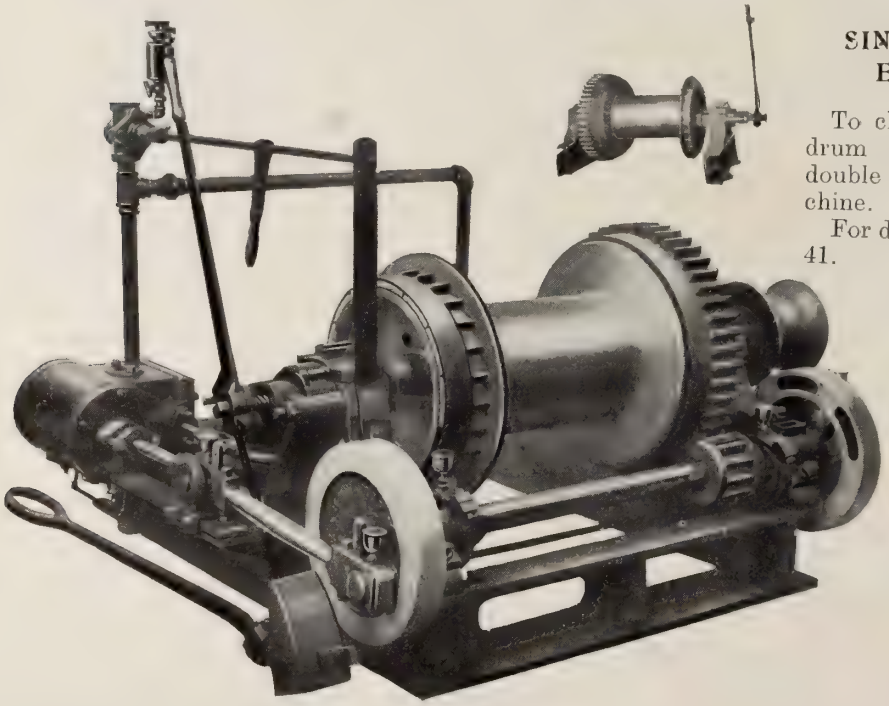
This Hoist is adapted for derrick work where the boom is operated by hand, and for all kinds of general hoisting, either light or heavy. The uses to which it is put are manifold, and are well known to contractors. For heavy work we always recommend this machine in place of the single cylinder hoist shown on pages 24 and 25, as the engines are always ready to start the load easily and steadily on account of there being no dead centers.

This single drum machine can at any time be made into a two-drum hoist by bolting on our Single Drum Extension, which is illustrated below and also on page 41.

The sizes of drums scheduled are standard. Other sizes are shown on pages 45 to 57.

Cylinders			Drum		Boiler				Bed Plate		Weight Hoisted with single line, LBS.	Hoisting Speed per Minute, FEET	Non-Reversing Engines	
H. P. usually Rated	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Diameter, inches	Height, inches	No. of 2 in Tubes	Length of Tubes	Width, inches	Length inches			Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	30	66	42	36	41	53	2600	160	Haggai	Ecdemite
15	6½	8	12	20	33	84	60	48	47	63	4000	160	Hair	East
20	6¾	10	12	22	37	90	72	54	49	69	5500	150	Hairbrush	Easter
25	7	12	12	24	40	90	88	54	53	76	7000	140	Haircloth	Easteregg
32	8	12	14	28	44	96	100	60	60	82	8000	140	Hairpin	Easterly
40	9	12	16	30	48	102	124	60	63	88	10000	140	Hairspring	Eastward
50	10	12	16	30	54	114	154	72	64	88	12500	140	Hagmena	Ecderon

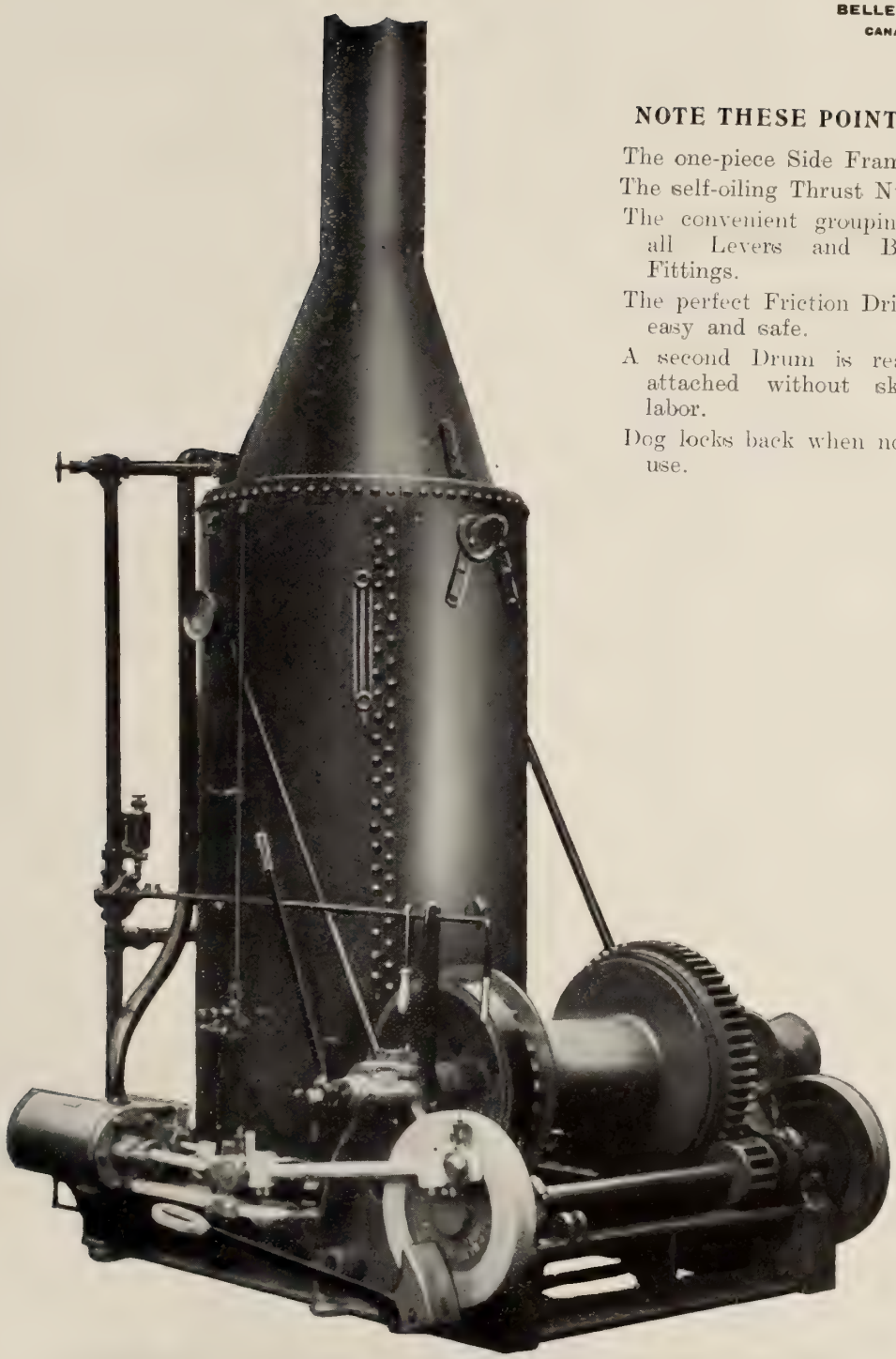
Size of Cylinders	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Estimated Shipping Weight, with Boiler	3500	5300	6400	7500	9000	13600	16300
Estimated Shipping Weight, without Boiler	1900	3100	3700	4300	5350	9000	10000
Suitable Weight of Pile Driving Hammer	1500	2500	3600	4800	6000	8000	9000
Code Word, Reversing Engine with Boiler	Haiduk	Hake	Haiver	Hakim	Hakot	Haku	Halacha
CodeWord Reversing Engine without Boiler	Echelon	Echeum	Echidna	Eyre	Echolali	Echometer	Eciton



SINGLE DRUM EXTENSION.

To change a single drum Hoist into a double drum machine.

For details see page 41.



NOTE THESE POINTS

The one-piece Side Frame.

The self-oiling Thrust Nut.

The convenient grouping of all Levers and Boiler Fittings.

The perfect Friction Drive—easy and safe.

A second Drum is readily attached without skilled labor.

Dog locks back when not in use.

STANDARD DOUBLE CYLINDER, SINGLE DRUM HOISTING ENGINE.

Sizes and specifications on opposite page.

STANDARD SINGLE CYLINDER, DOUBLE DRUM HOISTING ENGINE.

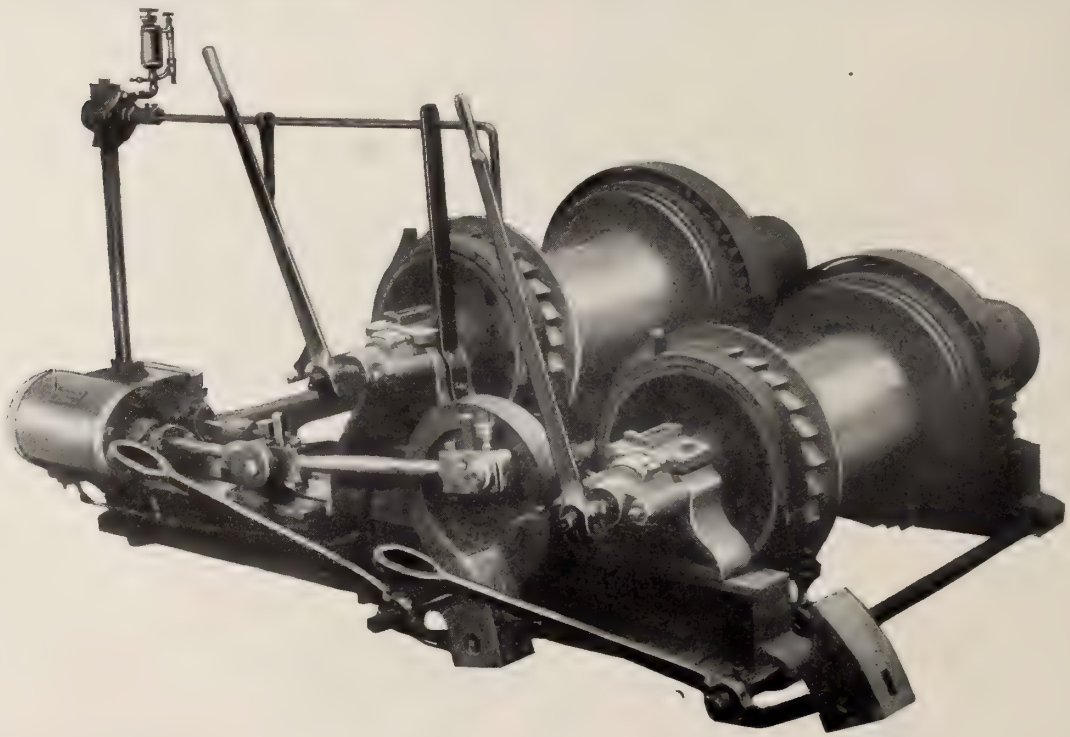
The Single Cylinder, Double Drum Hoists listed and illustrated on this and the opposite page are exactly the same in all respects as the two cylinder machines listed on pages 8 and 9, with one engine omitted, the boiler, of course, being proportionately smaller. All details of construction, however, are the same. The drums, gears, shafts, bearings, etc., are the same weight and strength, so it is possible at any time, if so desired, to have the second cylinder put in place and give the machine double the capacity.

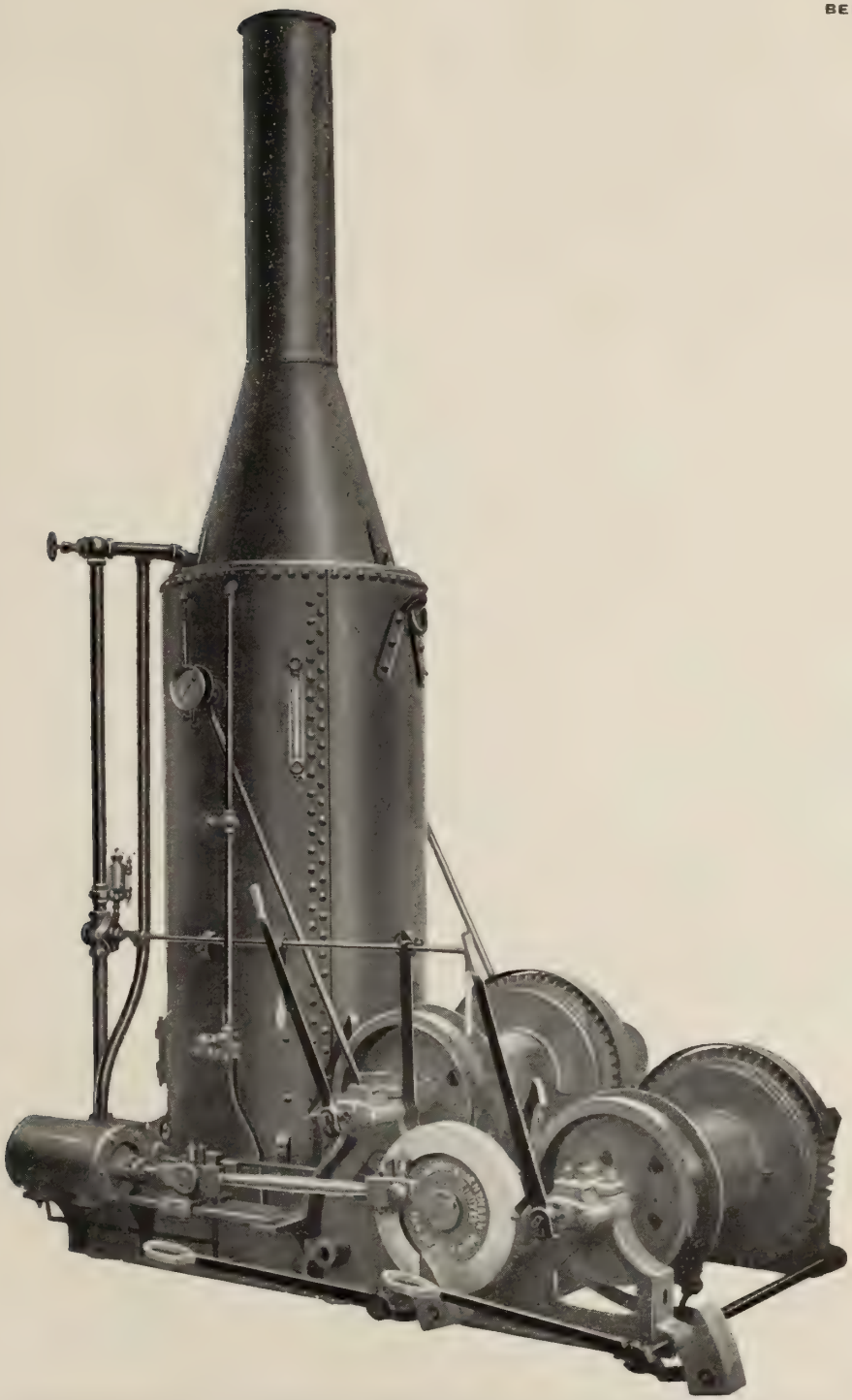
These Hoists will do their work as efficiently as any single cylinder machine in the market, and we have no hesitancy whatever in guaranteeing their strength, capacity and efficiency. They have, it is true, the same failing that is common to all one cylinder engines: that is, they are apt to stop at any time on the dead center. Watchfulness of the operator will frequently prevent this happening, and the addition of a reversing link motion to the engine will assist materially in getting by the dead center and save the operator the necessity of prying the engine over by hand. At best, however, a single cylinder is never as satisfactory as two cylinders on a machine like a Hoist which is run intermittently, and stopped and started so frequently.

Our Standard Boom Swinger, as shown on page 13, can be used in connection with this Hoist in either front or side position.

H.P. usually Rated	Cylinder		Drums		Boiler				Bed Plate		Weight Hoisted with Single	Hoisting Speed per Minute	Code Word with Boiler	Code Word without Boiler
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Diameter, inches	Height, inches	No. of 2 in. Tubes	Length of Tubes	Width inches	Length, inches	LBS.	FEET		
5	5	7	9	15	26	60	34	36	41	66	1300	160	Hagen	Eckle
7	6½	8	12	20	30	66	42	36	47	84	2000	160	Haggard	Echo
10	6¾	10	12	22	33	84	60	48	49	91	2700	150	Haggis	Eclipse
12	7	12	12	24	37	90	72	54	53	100	3500	140	Haggle	Eddy
16	8	12	14	28	40	90	88	54	60	110	4000	140	Hag	Eden
20	9	12	16	30	44	96	100	60	63	117	5000	140	Haft	Eclat
25	10	12	16	30	48	102	124	60	64	117	6000	140	Hadrome	Eclectic

Size of Cylinder	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Estimated Shipping Weight, with Boiler	3850	6000	7000	8200	10700	15500	18000
Estimated Shipping Weight, without Boiler	2250	3800	4400	5000	7000	10900	11800
Suitable Weight of Pile Driving Hammer	700	1200	1800	2400	3000	4000	4500





STANDARD SINGLE CYLINDER, DOUBLE DRUM HOISTING ENGINE.

Sizes and specifications on opposite page.

STANDARD SINGLE CYLINDER, SINGLE DRUM HOISTING ENGINE.

Hoisting Engines of this description are used quite extensively for light, rapid hoisting, such as pile driving, unloading coal, and other general dock work, and also in building construction.

A fly wheel pulley is supplied, as shown, so the power can be used for other purposes as required, when the drum is not hoisting. This fly wheel pulley is also supplied with the double drum single cylinder engines listed on pages 22 and 23, although it does not show very plainly in the photograph.

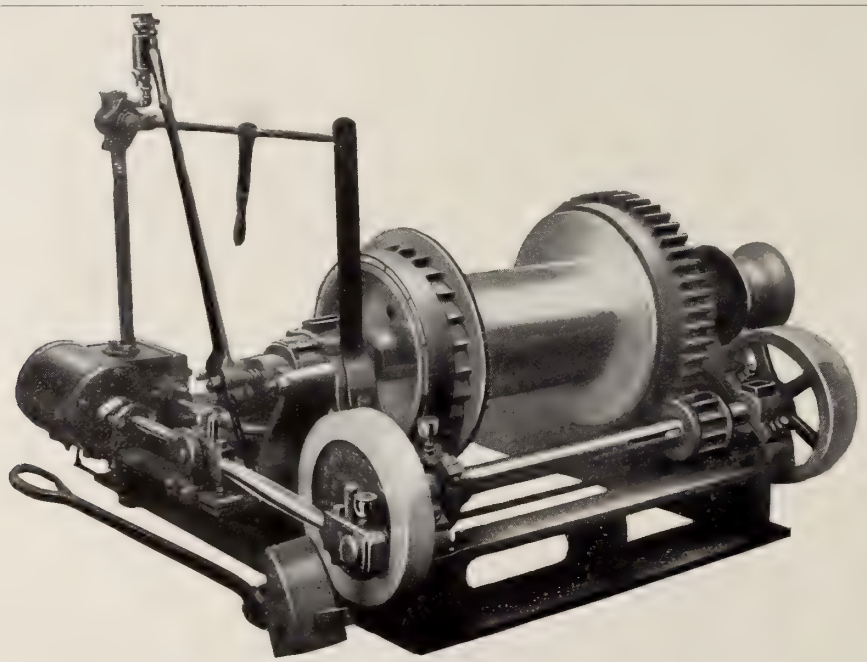
A spool or niggerhead can be substituted in place of the pulley without additional cost, if desired.

The general remarks on page 22 regarding one cylinder engines as a class apply to the single drum hoists also. The Single Drum Hoists, without boiler, as illustrated below, are small, compact, and low in price, and can be used to advantage in series or groups, all drawing steam from the one boiler. This arrangement is particularly adaptable to dock work, where a number of vessels are unloading at once.

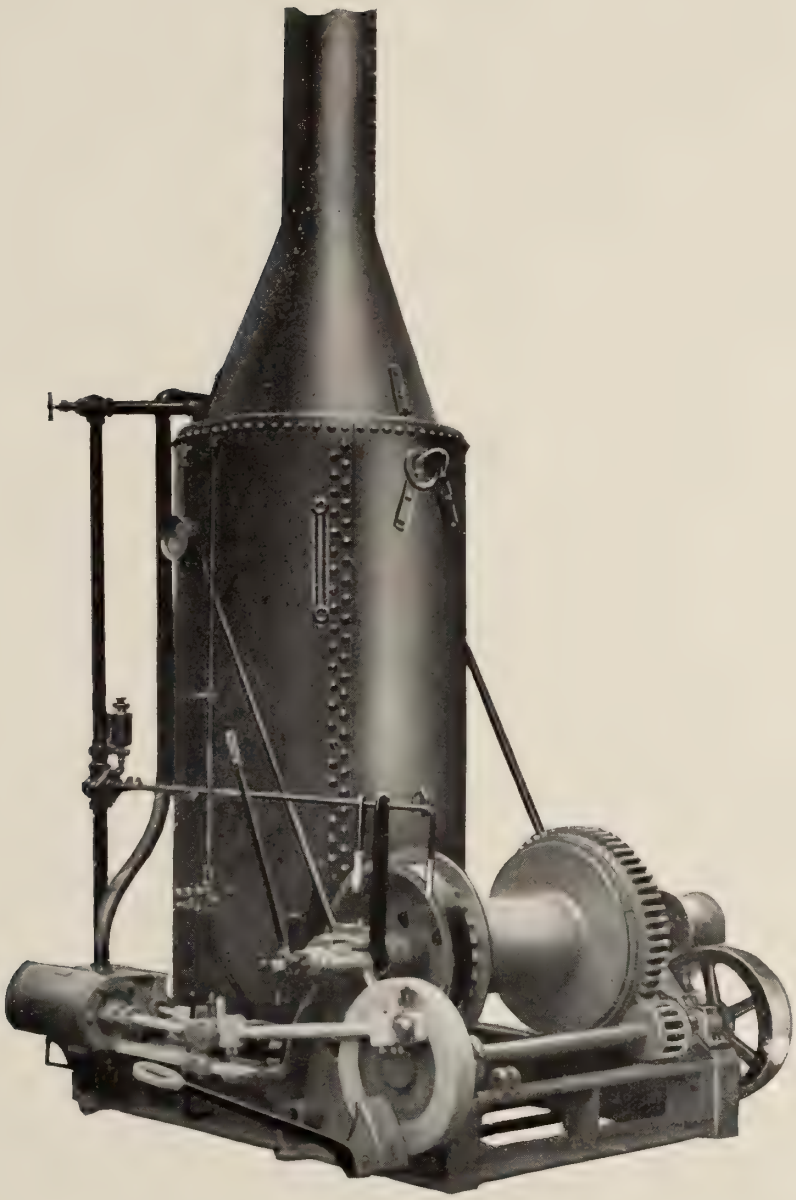
These Hoists can be mounted on trucks at a slight advance in price. This is sometimes a convenience in dock work.

H. P. usually Rated	Cylinder		Drum		Boiler				Bed Plate		Weight Hoisted with single line	Hoisting Speed per Minute	Code Word with Boiler	Code Word without Boiler
	Bore, inches	Stroke, inches	Diameter inches	Length, inches	Diameter inches	Height, inches	No. of 2 in. Tubes	Length of Tubes	Width, inches	Length, inches	LBS.	FEET		
5	5	7	9	15	26	60	34	36	41	53	1300	160	Habakkuk	Eclegm
7	6½	8	12	20	30	66	42	36	47	63	2000	160	Hack	Ebb
10	6¾	10	12	22	33	84	60	48	49	69	2700	150	Hackle	Ebbtide
12	7	12	12	24	37	90	72	54	55	76	3500	140	Hackney	Ebonite
16	8	12	14	28	40	90	88	54	60	82	4000	140	Haddock	Ebony
20	9	12	16	30	44	96	100	60	63	88	5000	140	Hades	Eclog
25	10	12	16	30	48	102	124	60	64	88	6000	140	Hadith	Eclosion

Size of Cylinders	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Estimated shipping weight, with Boiler	2250	4700	5700	6700	8000	12500	15000
Estimated Shipping Weight, without Boiler	1550	2500	3000	3500	4350	7900	8800
Suitable weight of Pile Driving Hammer	700	1200	1800	2400	3000	4000	4500



This is the same machine as shown on the opposite page, but without the Boiler. Sizes and specifications as tabulated above.



STANDARD SINGLE CYLINDER, SINGLE DRUM HOISTING ENGINE.

With Boiler.

Sizes and specifications on opposite page.

STANDARD DOUBLE DRUM BUILDERS' HOIST.

In the preceding pages we have shown only our standard general purpose Hoisting Engines—engines which can be, and are used for almost every conceivable purpose for which a Hoist can be used. In the following pages we illustrate and list a great variety of Special Purpose Hoisting Engines—engines which are designed for one particular class of work, and are best adapted for that work, although they are at times used for other purposes. First among them we show the Hoists we have designed especially for the building trade.

This Hoisting Engine is expressly designed for operating material or platform elevators for the hoisting of loaded wheelbarrows and other forms of light material, in the construction of large buildings. It will operate either one or two elevators, as desired, one going up as the other comes down. The elevators are worked by means of an endless rope, which is wound two or three times around the large sheave on the Hoist, and then connected to the elevator mechanism.

The large Sheave on this machine is thirty inches in diameter, and is therefore adapted for fast work.

These Builders' Hoists are usually made reversible, so a load may be hoisted in either direction, which is necessary when running a double elevator.

The large sheave can be either keyed fast to the shaft, in which case it runs constantly, or it can be loose on the shaft and set in motion by a clutch mechanism. The illustration on the opposite page shows the machine with the sheave loose and operated by this clutch mechanism.

The Hoisting Drums on these Builders' Hoists are the same size and capacity as the standard machines on pages 8 to 21, and can be used for working a derrick for handling the heavy materials, while the sheave is lifting the lighter loads.

The Builders' Hoist without the Boiler is convenient for setting inside the building, under shelter, and right close to the work, in which case one boiler can be used for driving several hoists.

A pulley can be substituted for the large sheave at any time, for operating a pump or other machinery.

The loose, clutch-driven sheave is fitted with a wood lined brake, which cannot be seen in the illustration.

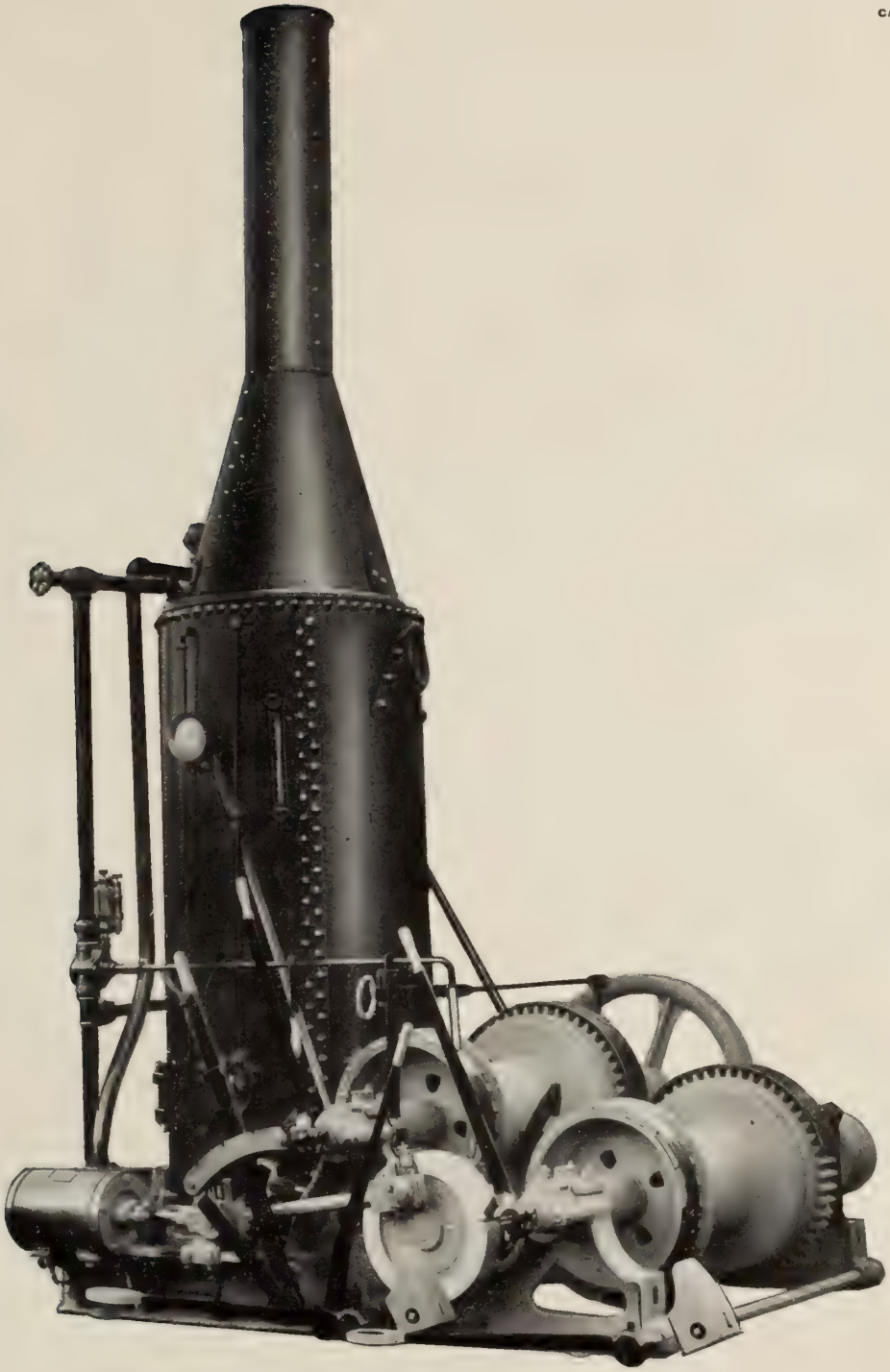
Specifications Double Drum Builder's Engine with large Sheave.

H. P. usually Rated	Cylinders		Drums		Weight Hoisted with single line	Hoisting Speed per Minute,	Estimated Shipping Weight, with Boiler	Reversing Engine with Clutch Sheave		Reversing Engine with Fixed Sheave	
	Bore, inches	Stroke inches	Diameter inches	Length inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	2600	160	4700	Hebe	Eclysis	Hakemite	Ectad
15	6½	8	12	20	4000	160	7400	Hecatomb	Ecorche	Haldanite	Ectaster
20	6¾	10	12	22	5500	150	8600	Heckle	Ecoute	Halfbreed	Ectene
25	7	12	12	24	7000	140	10000	Hectare	Ecphora	Halfa	Ecthesis
32	8	12	14	28	8000	140	12700	Hectic	Ecphyma	Halfcaste	Ectiris
40	9	12	16	30	10000	140	17500	Hector	Ecraseur	Halfer	Ectoderm
50	10	12	16	30	12500	140	20000	Hecate	Ecstasy	Halibut	Ectopia

Specifications of Boilers and sizes of Bed Plates are the same as the Standard Engines, pages 8 and 9.

Code Words for above Hoists, if non-reversing.

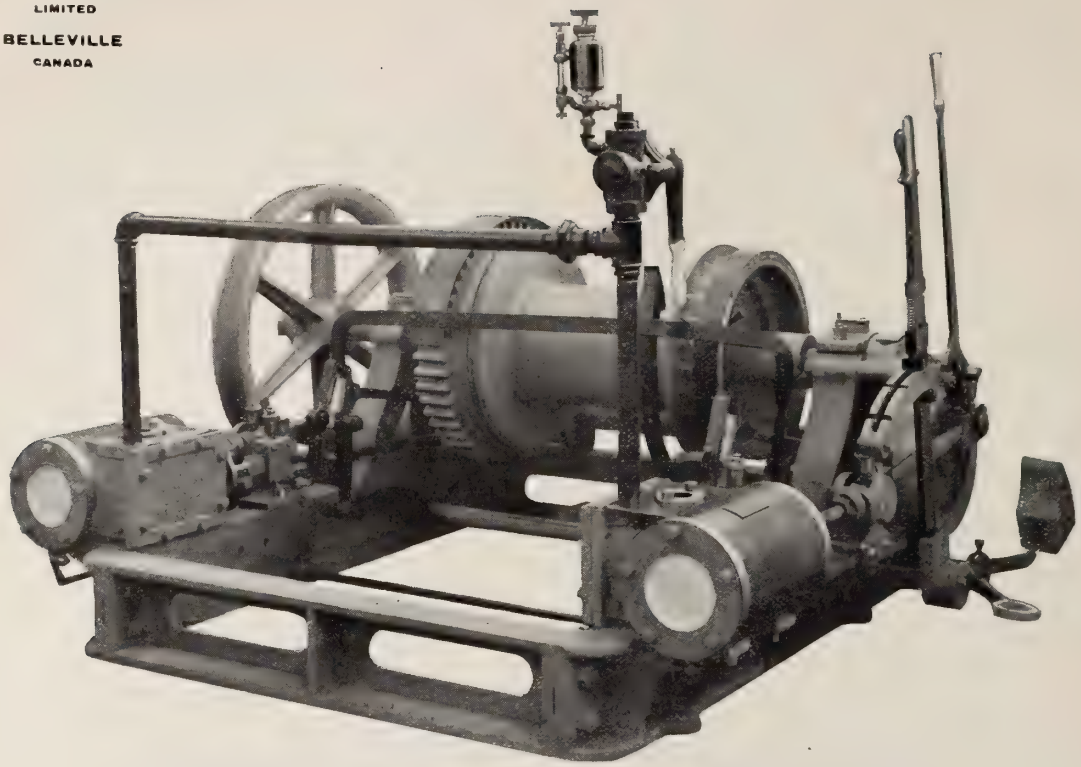
Size of Engine	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
With Boiler and Clutch Sheave	Haliplus	Halidom	Halitus	Halket	Hallan	Hallec	Hallion
Without Boiler and with Clutch Sheave	Ectrimma	Ectropic	Ectrosis	Ectype	Ecu	Ecurie	Ecusson
With Boiler and fixed Sheave	Hallux	Hallucal	Halma	Halo	Halogen	Haloid	Halones
Without Boiler and with Fixed Sheave	Eddoes	Edelweiss	Edema	Edesan	Edgrow	Edicule	Edile



STANDARD BUILDERS' HOIST

With Two Cylinders and Two Drums.

Sizes and specifications on opposite page.



STANDARD SINGLE DRUM BUILDERS' HOIST

The Engines shown on this and the opposite pages are exactly the same, and designed for the same purpose as the two drum engines on the preceding two pages. All that we have said regarding the operation of the double drum machine applies to this single drum hoist, excepting, of course, that it will not operate the boom of the derrick. This Single Drum Hoist is, we believe, used by builders even more extensively than the two drum machine, particularly in the smaller sizes, and is a very useful and inexpensive Hoist that soon pays for itself in the saving it effects in the cost of handling materials.

The illustration on this page shows this Hoist with the Sheave fixed, or keyed to the shaft. The picture on the opposite page shows the hoist with sheave loose on shaft, and set in motion by a clutch mechanism. The tables below give the machine in both ways, and also both with and without the reversing link motion.

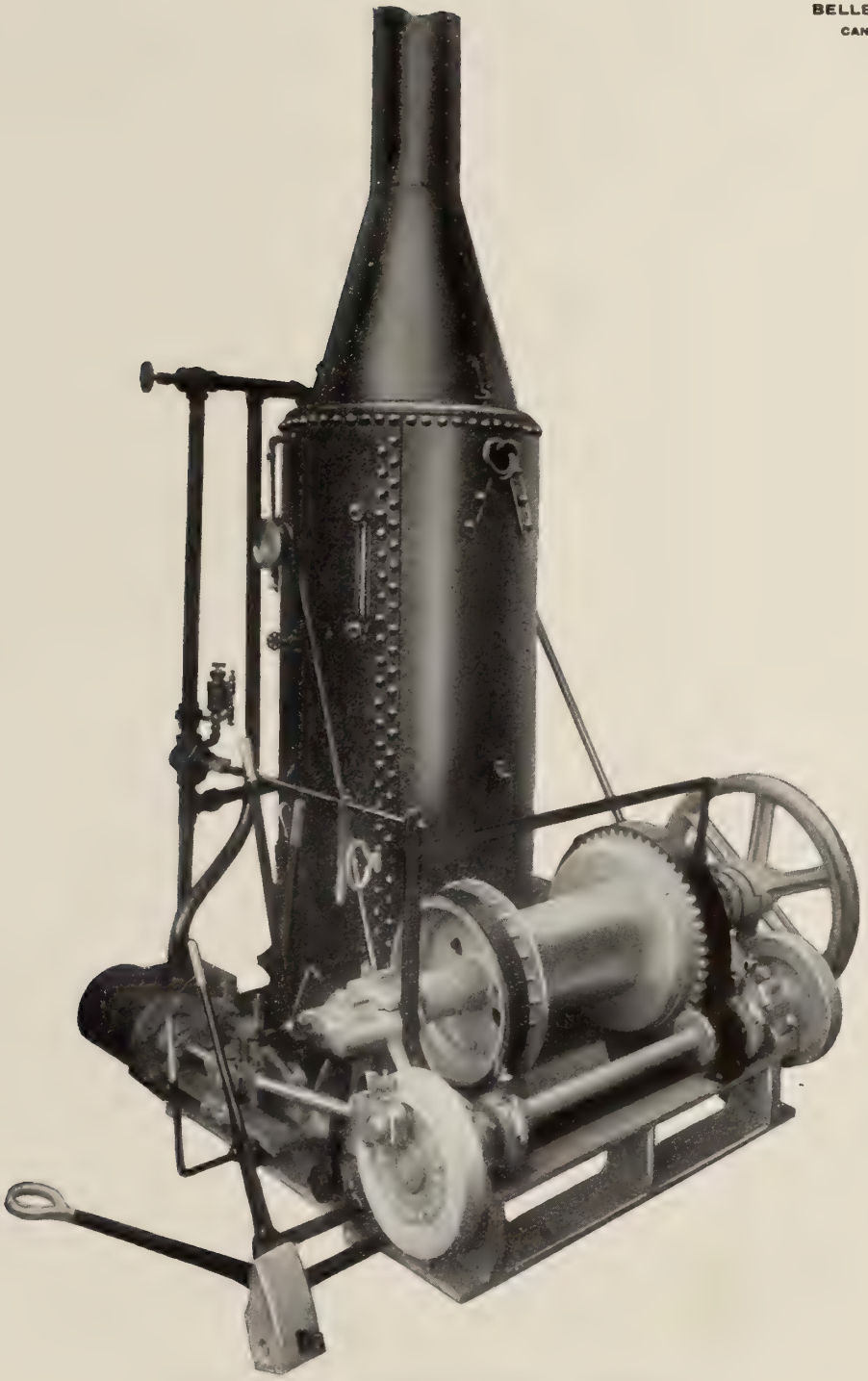
Specifications of Boilers and sizes of Bed Plates are the same as the Standard Engines, pages 20 and 21.

Specifications, Single Drum Builders' Hoist with Large Sheave.

H. P. usually Rated	Cylinders		Drum		Weight Hoisted with single line,	Hoisting Speed per Minute,	Estimated Shipping Weight, with Boiler	Reversing Engine with Clutch Sheave		Reversing Engine with Fixed Sheave	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	2630	160	4000	Heartsease	Eel	Halyard	Egad
15	6½	8	12	20	4000	160	6500	Hydrogen	Effendi	Hamal	Egean
20	6¾	10	12	22	5500	150	7300	Heaven	Effete	Hamburg	Egeria
25	7	12	12	24	7000	140	8400	Heavily	Effigy	Hame	Egis
32	8	12	14	28	8000	140	10000	Heaviness	Efflation	Hamerkop	Eglantine
40	9	12	16	30	10000	140	14600	Heavy	Effluvium	Hamite	Ego
50	10	12	16	30	12500	140	17400	Hebenon	Efflux	Hamkin	Egohood

Code Words for above Hoists if non-reversing.

Size of Engine	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
With Boiler and Clutch Sheave	Hamlet	Hamman	Hammock	Hamster	Hamstring	Hamulus	Hamus
Without Boiler and with Clutch Sheave	Egomania	Egregor	Egriot	Egypt	Ehlite	Eidolon	Eidoscope
With Boiler and Fixed Sheave	Handbill	Handcuff	Handmaid	Handsaw	Handaxe	Handwork	Handicraft
Without Boiler and with Fixed Sheave	Eirie	Eisel	Eirach	Ekia	Ela	Eland	Elanet



STANDARD BUILDERS' HOIST

With Two Cylinders and One Drum.

Sizes and specifications on opposite page.

STANDARD BRIDGE BUILDERS' ENGINE.

With Two Drums and Four Spools.

In the next few pages we illustrate and list another series of Special Purpose Hoisting Engines, namely, the Hoists which we build expressly for the handling of Structural Steel Work in bridges and large buildings. We build many varieties of these engines as may be seen by a careful examination of the thirteen pages following this, but the standard Hoist for this purpose is the one shown on the opposite page.

This Hoisting Engine has two drums for the handling of heavy pieces by means of a derrick. It has also four independent spools, or niggerheads, for the rapid hoisting of the lighter steel sections. It will thus be seen that six lines can be kept working with this Hoist, and that all may be lifting, if necessary, at one and the same time. For this purpose all four spools are independent, that is, they are loose on the shaft, and set in motion when required by a clutch mechanism. Each spool is provided with a ratchet and dog to hold the spool stationary when that is necessary.

These Structural Steel Engines are made reversible usually, and are so shown in the photograph on the opposite page, but they are also made non-reversing, and a photograph of one such is shown on page 32. When the Engine is reversing the spools are fitted with a spiral jaw clutch; when made non-reversing they have a square jaw clutch, unless otherwise ordered.

When used for bridge erecting, these Hoists are usually mounted on a special derrick car which they propel themselves by means of a gear or a chain drive operated by the clutch on the forward shaft. On page 33 may be seen a picture of one of the larger sizes of these hoists with the sprocket in place ready to connect to the chain drive mechanism. This Clutch on the forward shaft is not an integral part of the Hoisting Engine, and is therefore only supplied as an extra, and is always charged as such.

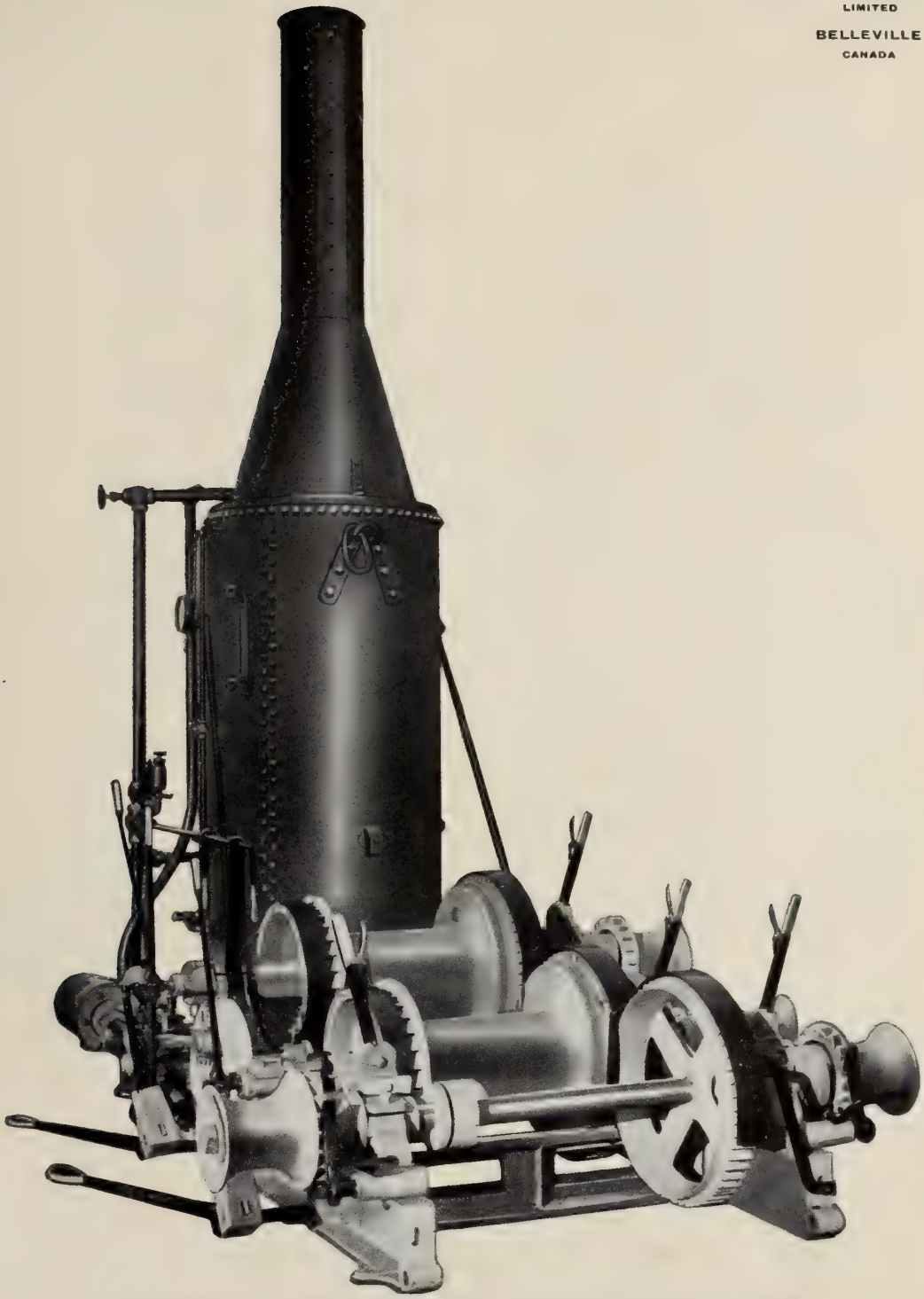
Specifications of Standard Erecting Engine with Two Drums and Four Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line,	Hoisting Speed per Minute	Estimated Shipping W'ght with Boiler	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Width, inches,	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	44	80	2600	160	5500	Housal	Elaps	Harmala	Elaterite
15	6½	8	12	20	54	108	4000	160	7000	House	Elaphure	Harmel	Elbuck
20	6¾	10	12	22	56	117	5500	150	9900	Household	Elapidae	Harmine	Elcaja
25	7	12	12	24	60	131	7000	140	11300	Housemaid	Elastance	Harminia	Elchee
32	8	12	14	28	67	144	8000	140	15300	Houserent	Elastin	Harn	Elcosis
40	9	12	16	30	70	153	10000	140	19900	Housewife	Elatchee	Harnser	Elderwort
50	10	12	16	30	72	153	12500	140	23000	Houseleek	Elayl	Harpa	Eleatic

Specifications of Standard Erecting Engine with One Drum and Three Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line,	Hoisting Speed per Minute	Estimated Shipping W'ght with Boiler	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Width, inches	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	44	66	2600	160	4700	Herb	Elecampane	Harpago	Elegit
15	6½		12	20	54	84	4000	160	7200	Herbal	Electary	Harpidae	Eleidin
20	6¾	10	12	22	56	91	5500	150	8400	Herbage	Elector	Harpoon	Eleme
25	7	12	12	24	60	100	7000	140	9500	Herbergh	Electra	Harpour	Elemin
32	8	12	14	28	67	110	8000	140	12500	Herbivora	Electuary	Harpula	Elenchus
40	9	12	16	30	71	117	10000	140	16900	Herbescent	Eledone	Harquebus	Elenge
50	10	12	16	30	72	117	12500	140	19500	Herbivy	Elegiac	Harridan	Elet

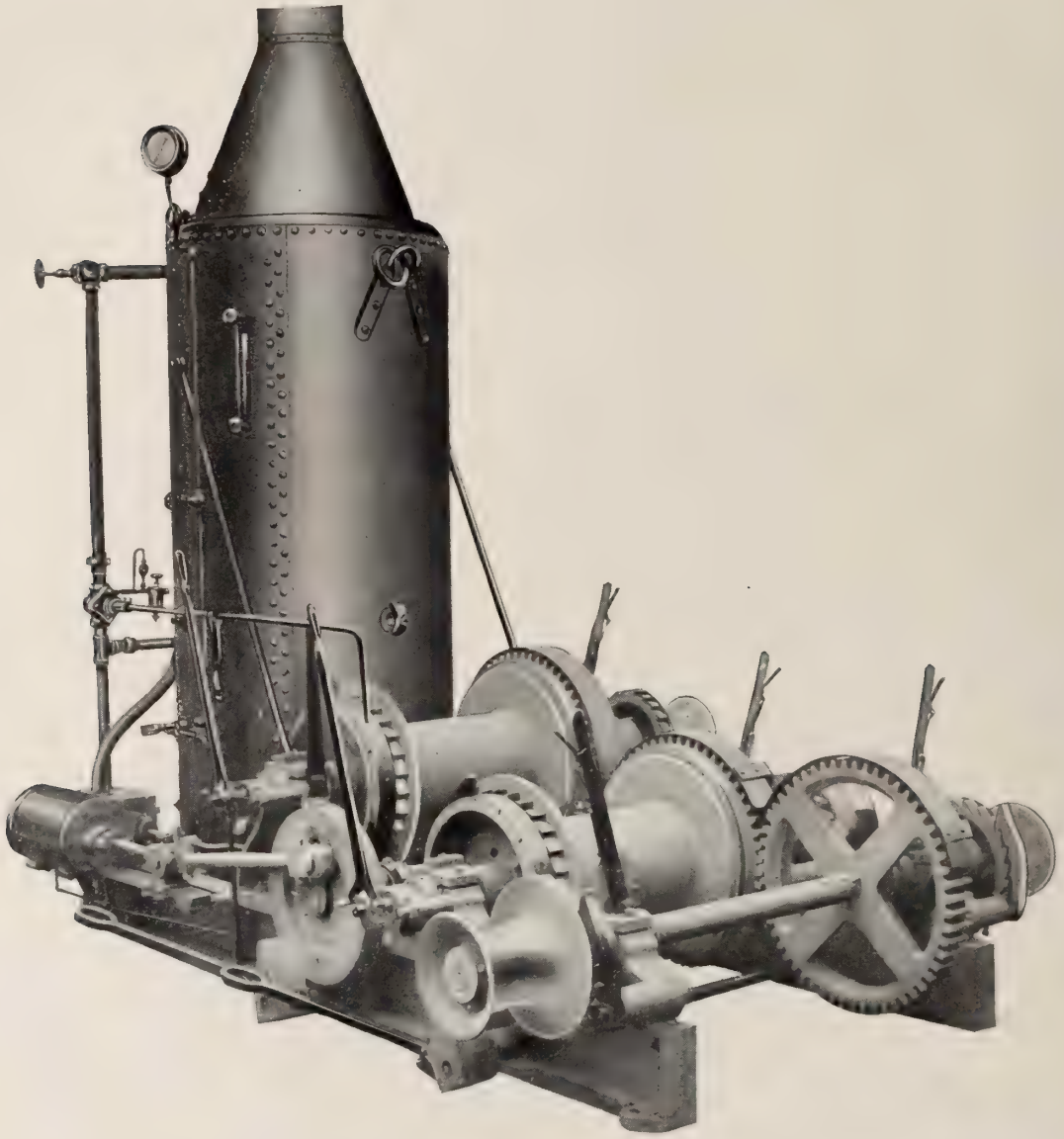
Boilers for above machines are all the same size and capacity as for the same sizes of Standard Hoists on pages 8 and 9.



STANDARD REVERSIBLE ERECTING ENGINE.

With Two Drums and Four Independent Spools.

Sizes and specifications on opposite page.

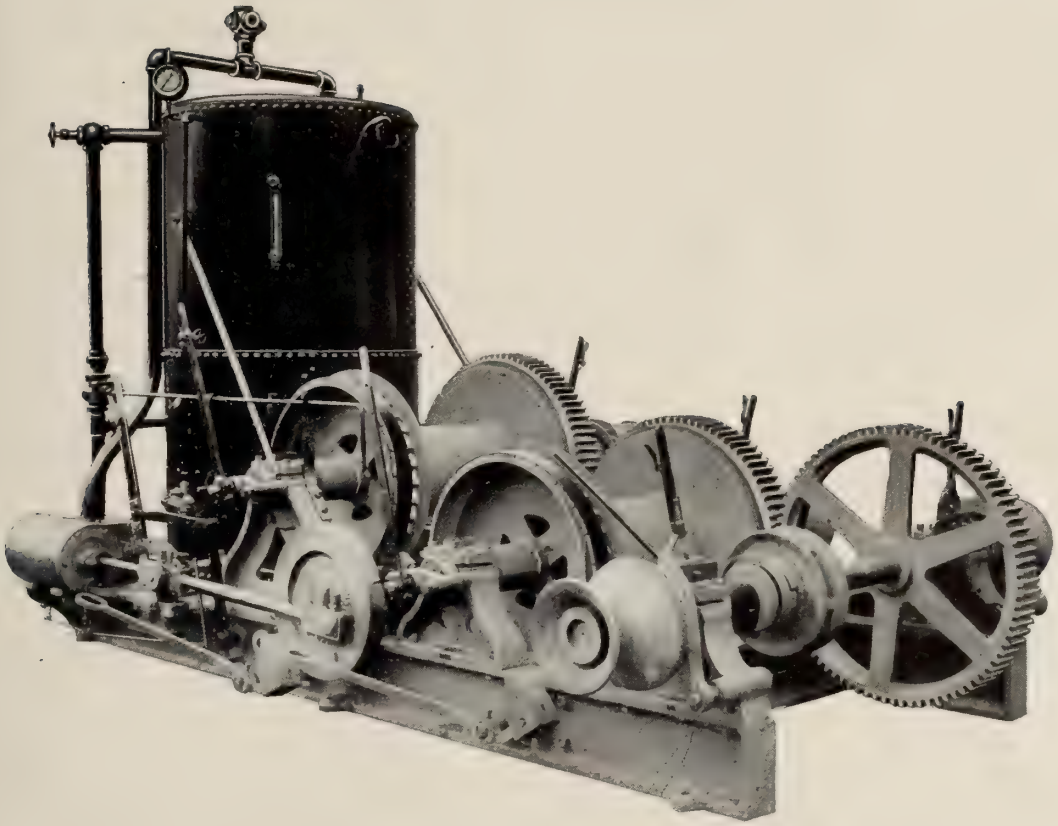


STANDARD NON-REVERSIBLE ERECTING ENGINE.

With Two Drums and Four Independent Spools.

For Bridge Builders and Structural Steel Workers.

Full specifications and telegraphic code words for these Engines are given on page 30.



STANDARD REVERSIBLE ERECTING ENGINE.

With Two Drums and Four Independent Spools.

This is the same style of machine as illustrated and described on pages 30 and 31, but the photograph was taken from one of the larger sizes, and shows well the massive construction of these large Erecting Engines.

Full Specifications and Telegraph Code Words for these engines are given on page 30.

The expenditure for repairs on a poorly designed hoist may amount to more in a single season than the original cost of the machine. We know of no machine in which the item of repairs has been reduced to so low a minimum as in our make of hoisting engine.

SPECIAL ERECTING ENGINE.

With Two Drums and Four Independent Spools.

This machine is exactly the same as the Standard Bridge machines illustrated and described on pages 30 and 31, excepting that the four spools or niggerheads are all mounted on the two drum shafts, thus doing away with the third shaft and gearing, and making the machine smaller and more compact. On account of the smaller space the machine occupies, this arrangement is preferred by many experienced structural steel erectors.

These Erecting Engines are all fitted with our improved Ball Bearing Thrust mechanism, as illustrated and described on page 5 of this catalogue. This Ball Bearing Cam Thrust is made necessary because it is obviously impossible to use our Standard self-oiling Thrust Nut because of the spools on both ends of the Drum Shafts.

We also put this Ball Bearing Thrust on the Standard Erecting Engine whenever desired by the customer, at a slight advance in cost.

We make these engines with one, two, or three drums, as required, and with two spools on each drum shaft, as per specifications below.

Specifications of this Hoist with Two Drums and Four Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line,	Hoisting Speed per Minute	Estimated Shipping W'ght with Boiler	Reversing Engine		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Width, inches	Length, Inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	41	66	2600	160	5000	Hulu	Eleusinia	Harrier	Elkwood
15	6½	8	12	20	47	84	4000	160	7800	Human	Eligmidae	Harrateen	Ellachick
20	6¾	10	12	22	49	91	5500	150	9000	Humble	Eliquate	Harrisbuck	Ellbone
25	7	12	12	24	53	100	7000	140	10200	Humbug	Elisor	Hart	Elleborin
32	8	12	14	28	60	110	8000	140	13500	Humdrum	Elivagar	Hartal	Elleck
40	9	12	16	30	63	117	10000	140	18400	Humid	Elix	Hartbeest	Ellenge
50	10	12	16	30	64	117	12500	140	21000	Humerus	Elknut	Hartin	Ellenic

Specifications of this Hoist with One Drum and Two Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line,	Hoisting Speed per Minute	Estimated Shipping W'ght with Boiler	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke inches	Diameter, inches	Length, inches	Width, inches	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	41	53	2600	160	4000	Hartite	Ellerian	Harvest	Ellwife
15	6½	8	12	20	47	63	4000	160	6000	Hartshorn	Ellipsis	Hassar	Elocation
20	6¾	10	12	22	49	69	5500	150	7150	Haruspex	Ellipsoid	Hassock	Elod
25	7	12	12	24	53	76	7000	140	8250	Hashish	Elloopa	Hastate	Elodes
32	8	12	14	28	60	82	8000	140	10100	Haskard	Ellops	Hatamoto	Elodites
40	9	12	16	30	63	88	10000	140	14700	Haskwort	Ellrake	Hatchet	Elopidae
50	10	12	16	30	64	88	12500	140	17400	Haslet	Ellwand	Hybrid	Elsen

Specifications of this Hoist with Three Drums and Six Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line,	Hoisting Speed per Minute	Estimated Shipping W'ght with Boiler	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, iheches	Width, inches	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	44	80	2600	160	6000	Hatchment	Elt	Haulm	Elytrum
15	6½	8	12	20	54	108	4000	160	8500	Hattemist	Eltrot	Haunch	Emancipe
20	6¾	10	12	22	56	117	5500	150	11000	Hatteria	Elul	Haunient	Emarcid
25	7	12	12	24	60	131	7000	140	12500	Hattock	Elution	Hausen	Emballage
32	8	12	14	28	67	144	8000	140	16600	Haubeik	Eluvium	Haustrum	Embargo
40	9	12	16	30	70	153	10000	140	22000	Haudin	Elvan	Haustus	Embayle
50	10	12	16	30	72	153	12500	140	24600	Hauerite	Elysian	Hautboy	Embench

Boilers for above machines are all the same size and capacity as for the same sizes of Standard Hoists on pages 8 and 9.

SPECIAL ERECTING ENGINE

With Two Drums and Four Independent Spools.

Sizes and Specifications on opposite page.

SPECIAL STRUCTURAL STEEL ENGINE.

This is a modification of the Hoisting Engine shown on the preceding two pages. Having Spools on one end only of the drum shafts, the Ball Bearing Cam Thrust is not necessary, so our standard self-oiling Thrust Nut is used. Both Spools, or Niggerheads, are independent, that is, they are loose on the shaft and set in motion by a clutch mechanism, same as for standard Bridge Engine on pages 30 and 31.

This machine is made either reversing or non-reversing. The Hoist from which the photo on the opposite page was taken is not reversing.

These special Hoists are made with either two drums and two independent spools, as shown in the illustration, or with only one drum and one independent spool, as listed below.

Specifications of this Hoist with Two Drums and Two Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		W'ght Hoisted with single line, LBS.	Hoisting Speed per Minute FEET	Estimated Shipping W'ght with Boiler LBS.	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Width, inches	Length, inches				Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	41	66	2600	160	4500	Hauteur	Embering	Havil	Embolium
15	6½	8	12	20	47	84	4000	160	7000	Haveld	Embidae	Havildar	Embonpoint
20	6¾	10	12	22	49	91	5500	150	8300	Havelock	Embla	Havior	Embouchure
25	7	12	12	24	53	100	7000	140	9500	Havenet	Emblica	Haw	Embracery
32	8	12	14	28	60	110	8000	140	12400	Haverel	Embog	Hawbuck	Embrasure
40	9	12	16	30	63	117	10000	140	17300	Haversack	Embolus	Hawcubite	Embrocado
50	10	12	16	30	64	117	12500	140	20000	Haversian	Embolite	Hawebake	Embroglio

Specifications of this Hoist with One Drum and One Independent Spool.

H. P. usually Rated	Cylinders		Drum		Bed Plate		W'ght Hoisted with single line, LBS.	Hoisting Speed per Minute FEET	Estimated Shipping W'ght with Boiler LBS.	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Width, inches	Length, inches				Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
10	5	7	9	15	41	53	2600	160	3650	Hawfinch	Embroidery	Hawthorn	Emerod
15	6½	8	12	20	47	63	4000	160	5500	Hawk	Eme	Haxter	Emesis
20	6¾	10	12	22	49	69	5500	150	6600	Hawkbill	Emeer	Haybird	Emeute
25	7	12	12	24	53	76	7000	140	7700	Hawkbit	Emendals	Hayfork	Emfasis
32	8	12	14	28	60	82	8000	140	9350	Hawkeye	Emerald	Hayfield	Emgalla
40	9	12	16	30	63	88	10000	140	14000	Hawock	Emeril	Hayfever	Emmenia
50	10	12	16	30	64	88	12500	140	16700	Hawin	Emeritus	Haynote	Emmet

Boilers for above machines are all the same size and capacity as for the same sizes of Standard Hoists on pages 8 and 9.

SPECIAL STRUCTURAL STEEL ENGINE.

With Two Drums and Two Independent Spools.

Sizes and specifications on oppcsite page.

SPECIAL TWO DERRICK ENGINE.

For Bridge or Structural Steel Work.

This is a special engine that we have devised for large operations where a quantity of material has to be handled, much of it in heavy sections. With this Special Hoist two derricks can be operated at once, or independently, as desired, for the raising of the heavier pieces, while with the four independent spools four lines can be kept busy elevating the lighter parts.

This will be found to be a strong, compact, and very serviceable machine. It is not a 'freak machine', but is a practical Hoist, designed by practical men, and its worth has been proven by men of much experience.

This machine will also propel the car it is mounted on, by means of a gear or chain drive off the front shaft, same as the standard Bridge Engine on pages 30 to 33.

A third Hoisting Drum can be put on the forward shaft, if desired, at a moderate advance in cost. With this third drum in place the car-propelling mechanism can be put in place of one of the two front spools. This five drum, four spool Hoisting Engine is listed below.

Specifications of this Hoist with Four Drums and Four Independent Spools.

H.P. usually Rated	Cylinders		Main Drums		Small Drums		Bed Plate		Weight Hoisted with single line	Hoisting Speed per Minute,	Estim'd Shippin' Weight,	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter inches	Length inches	Diameter inches	Length inches	Width inches	Length inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
15	6½	8	12	20	12	11	54	132	4000	160	10000	Hayloft	Emmonsite	Hayfield	Empanoply
20	6¾	10	12	22	12	11	56	143	5500	150	11300	Hayrack	Emodin	Hayesine	Empasm
25	7	12	12	24	12	11	60	162	7000	140	12700	Haystack	Emollient	Haymaker	Empathema
32	8	12	14	28	12	14	67	178	8000	140	17600	Haypress	Exudation	Haymow	Empery
40	9	12	16	30	14	14	71	189	10000	140	22000	Haytit	Empacket	Hayseed	Empetrous
50	10	12	16	30	14	14	72	189	12500	140	25400	Haymarket	Empestic	Hayward	Emphylesis

Specifications of this Hoist with Three large Drums, Two small Drums, and Four Independent Spools, third drum on forward Shaft, and operated by Ball-Bearing Thrust.

H.P. usually Rated	Cylinders		Main Drums		Small Drums		Plate Bed		Weight Hoisted with single line	Hoisting Speed per Minute,	Estim'd Shippin' Weight,	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter, inches	Length, inches	Diameter, inches	Length, inches	Width, in.	Length, inches	LBS.	FEET	LBS.	Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
15	6½	8	12	20	12	11	54	132	4000	160	10500	Hayz	Emphotion	Heathen	Emperer
20	6¾	10	12	22	12	11	56	143	5500	150	11900	Hazara	Emphractic	Heathwort	Empirema
25	7	12	12	24	12	11	60	162	7000	140	13300	Hazel	Emphraxis	Heaume	Empiric
32	8	12	14	28	12	14	67	178	8000	140	18600	Hydra	Emphysema	Hebdomadal	Empirism
40	9	12	16	30	14	14	71	189	10000	140	23000	Headache	Empis	Hebiter	Emplectite
50	10	12	16	30	14	14	72	189	12500	140	26600	Headcheese	Empight	Hebraism	Emplecton

Boilers for above machines are all the same sizes and capacities as for same sizes of Standard Hoists on page 8 and 9.

SPECIAL FOUR DRUM, FOUR SPOOL BRIDGE, OR STRUCTURAL STEEL HOIST.

For operating two derricks with one hoisting engine.
Sizes and specifications on the opposite page.

SPECIAL ERECTING ENGINE.

With Three Drums and Four Independent Spools.

For Bridge Builders and Structural Steel Workers.

The Special Erecting Engine shown on the opposite page is the same machine as our Standard Bridge Hoist illustrated and described on pages 30 to 33, but with a third drum placed on the forward shaft, which in the standard machine has only the two spools. The addition of the third drum makes it possible to operate a clam-shell or orange peel bucket with this Hoist, as well as to erect bridge work. In other words, it makes more of a general purpose machine than the Standard Bridge Hoist.

It will be noticed that this machine is fitted with our Improved Ball Bearing Cam Thrust for operating the three drums. This is made necessary on account of the impossibility of using the ordinary thrust nut on the forward shaft.

We build this style of Erecting Engine also with four Hoisting Drums and six Independent Spools, one spool on each of the two back shafts and two spools on each of the two front shafts. This four drum machine can be used for operating two derricks, and handling six separate lines with the six spools, making ten lines in all driven by the one machine, which will be found a convenience as well as an economy in many ways.

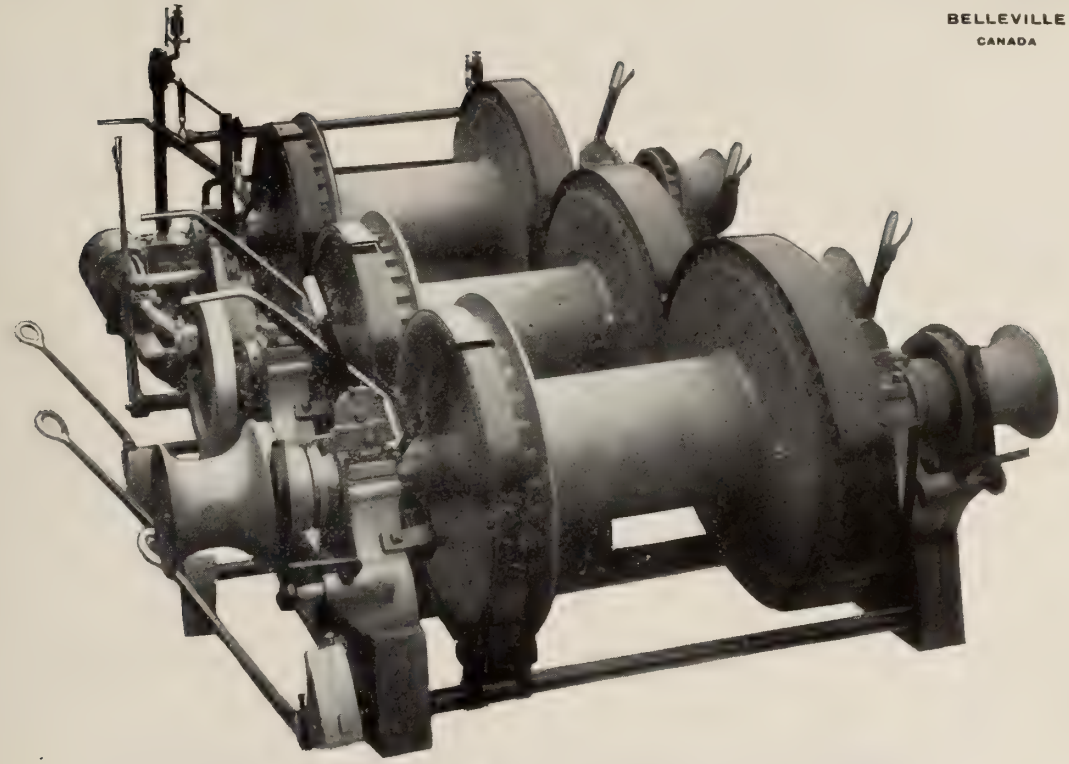
Specifications of this Hoist with three Drums and Four Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		Weight Hoisted with Single Line LBS.	Hoisting Speed per Minute FEET	Estim'd Ship'ng Weight LBS.	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter inches	Length, inches	Width, inches	Length, inches				Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
15	6½	8	12	20	54	108	4000	160	9100	Hebrew	Empodium	Heemraad	Emptysis
20	6¾	10	12	22	56	117	5500	150	10400	Heddle	Empolder	Heep	Empusa
25	7	12	12	24	60	131	7000	140	11800	Hedera	Emporial	Heeze	Empyema
32	8	12	14	28	67	144	8000	140	16200	Hederine	Emprise	Hefafi	Empyesis
40	9	12	16	30	71	153	10000	140	21000	Hederose	Emptins	Hegberry	Empyocele
50	10	12	16	30	72	153	12500	140	24000	Hedgepig	Emptor	Hegelian	Empyreal

Specifications of this Hoist with Four Drums and Six Independent Spools.

H. P. usually Rated	Cylinders		Drums		Bed Plate		Weight Hoisted with Single Line LBS.	Hoisting Speed per Minute, FEET	Estim'd Ship'ng Weight LBS.	Reversing Engines		Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter inches	Length inches	Width, inches	Length inches				Code Word with Boiler	Code Word without Boiler	Code Word with Boiler	Code Word without Boiler
15	6½	8	12	20	54	132	4000	160	10900	Hecdecane	Emrod	Hegemony	Hektogram
20	6¾	10	12	22	56	143	5500	150	12300	Heck	Emulsic	Hegira	Heigh
25	7	12	12	24	60	162	7000	140	13800	Heckimal	Emyd	Hegleek	Heimdal
32	8	12	14	28	67	178	8000	140	19200	Hectoid	Enamour	Hegoleh	Heintzite
40	9	12	16	30	71	189	10000	140	24700	Hedonic	Enargite	Hegrie	Heirloom
50	10	12	16	30	72	189	12500	140	27800	Heehaw	Enatant	Hegumenos	Heleoid

Boilers for above machines are all the same size and capacity as for the same sizes of Standard Hoists on pages 8 and 9.



SPECIAL THREE DRUM, FOUR SPOOL BRIDGE OR STRUCTURAL STEEL ENGINE.

EXTENSION DRUM

For bolting to any Hoist in the preceding pages.

EXTENSION DRUM.

The Single Drum and Bearings complete shown herewith may be added to any of the Hoisting Engines shown in the preceding pages. It is designed primarily, however, for placing in front of our Standard Single or Double Drum Hoisting Engines shown on pages 9 and 21, thus transforming them into two and three drum machines.

With this attachment any Single Drum Hoist can be quickly changed into a Double Drum Hoist, or any Double Drum Hoist can be as readily changed into a Three Drum machine. It is thus possible to greatly increase the capacity of a Hoist without much additional outlay of capital.

Telegraphic Code Words for Single Drum Extension.

Size of Engines.....	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Code Word for Non-Reversing Engines ...	Helena	Helopolis	Helheim	Heliotrope	Helium	Hellebore	Hellenic
Code Word for Reversing Engines.....	Hellient	Helmet	Helmsman	Helot	Helvetian	Helvite	Hemstitch

FOUR SPOOL STRUCTURAL STEEL HOIST.

With Two Steam Cylinders and No Drums.

This Erecting Engine is designed exclusively for the handling of steel sections in the erection of Bridges or large buildings. Having no drums, it cannot, of course, be used as a general purpose Hoist, but for its own particular work it is unexcelled.

All four spools are independent, that is, any one of them can be operated as desired without affecting the others. The amount of rope that may be wound by one spool is unlimited, so they can be used for a long lift or haul, and by the use of all four lines simultaneously very heavy loads can be lifted. Indeed it is possible in this way to hoist a load greater than a hoisting drum on the same size of engine would lift.

Each spool is supplied with a ratchet and pawl, so a load may be held in any desired position after it is hoisted.

The cylinders, discs, connecting rods, etc., are all placed inside of the frame, out of the way, so they cannot foul the ropes.

We make these Hoists either reversible or non-reversible, as desired. The one in the illustration on the opposite page is reversible.

The trucks shown in the photograph are supplied only as an extra.

We also build these Engines with six independent spools, as listed below.

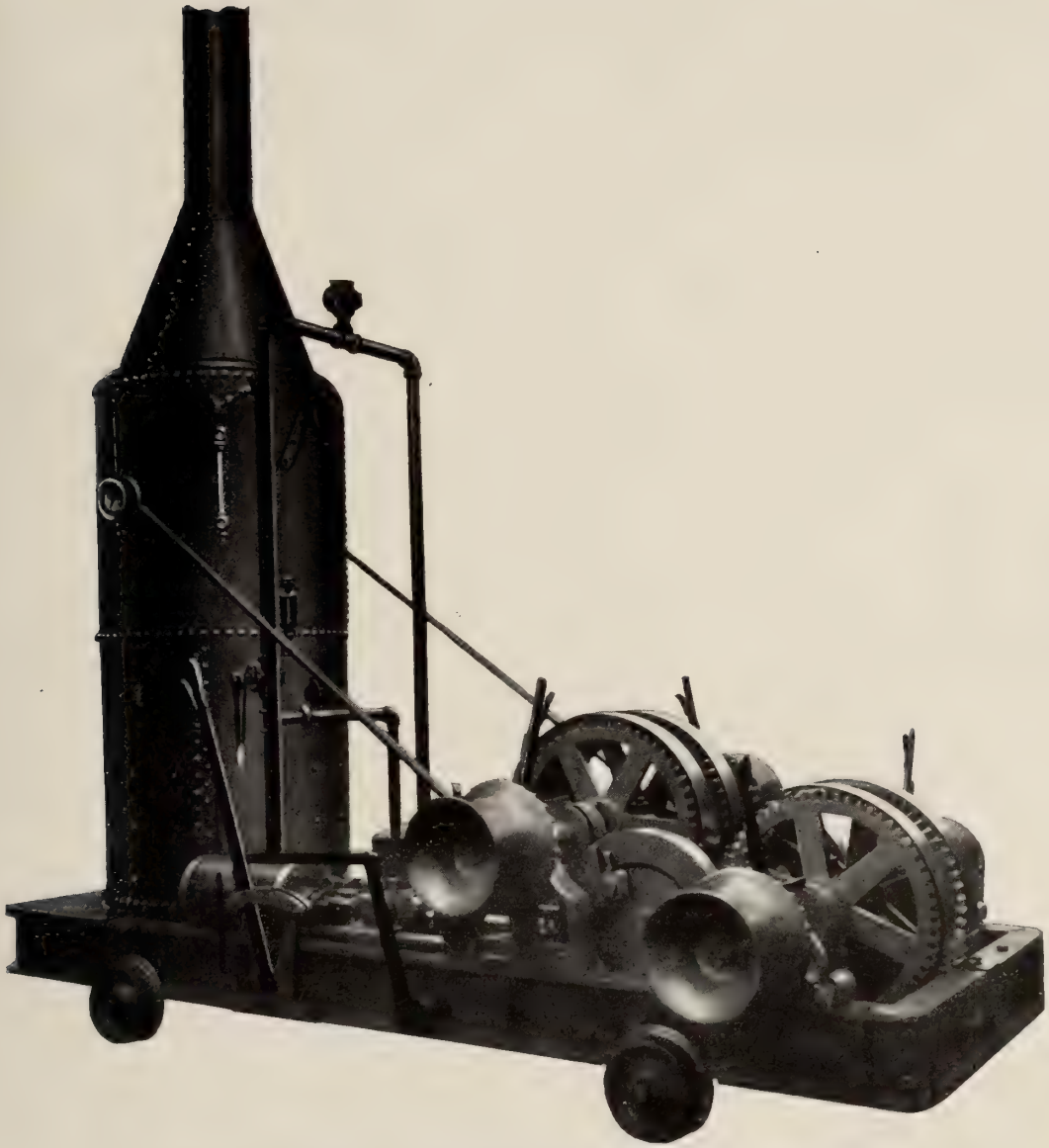
Specifications of this Hoist with Four Independent Spools, as illustrated.

H. P. usually Rated	Cylinders		Boiler		Bed Plate		Estimated Shipping Weight lbs.	Code Word for Reversible Engine		Code Word for Non-Reversible Engine	
	Bore, inches	Stroke, inches	Diameter, inches	Height, inches	Width, inches	Length, inches		With boiler	Without boiler	With boiler	Without boiler
15	6½	8	33	84	56	132	7000	Hunter	Encadre	Hump	Encenia
20	6⅞	10	37	90	56	138	8200	Hurdle	Encanthis	Humpback	Enchorial
25	7	12	40	90	56	148	9200	Hurricane	Encarpus	Hunchback	Enchylema
32	8	12	44	96	60	156	11000	Husky	Enchuma	Hunger	Enchyma
40	9	12	48	102	63	168	16200	Hussy	Encaustum	Hunk	Enchymoma
50	10	12	54	114	63	168	19000	Hussar	Enceletis	Huntsman	Encipient

Specifications of this Hoist with Six Independent Spools.

H. P. usually Rated	Cylinders		Boiler		Bed Plate		Estimated Shipping Weight lbs.	Code Word for Reversible Engine		Code Word for Non-Reversible Engine	
	Bore, inches	Stroke, inches	Diameter, inches	Height, inches	Width, inches	Length, inches		With boiler	Without boiler	With boiler	Without boiler
15	6½	8	33	84	56	132	8400	Hempweed	Enclave	Hepar	Encolpion
20	6⅞	10	37	90	56	138	9600	Henbane	Enslisis	Hepatica	Encolpitis
25	7	12	40	90	56	148	10700	Hench	Enclitic	Hepper	Encolure
32	8	12	44	96	60	156	14000	Hengen	Encore Encrier	Heptane	Encratism
40	9	12	48	102	63	168	18800	Henna	Encowl	Heptarch	Encratite
50	10	12	54	114	63	168	21700	Hennin	Encraty	Heptyl	Encrinal

Boilers for above machines are all the same size and capacity as the same sizes of Standard Hoists on pages 8 and 9.



FOUR SPOOL STRUCTURAL STEEL HOIST.

For Bridge Builders and Structural Steel Workers in general.

Sizes and specifications on opposite page.

Any of our hoisting engines will be fitted with reversing link motion, at a slight extra cost, if so desired.

HIGH SPEED HOISTS.

It will be noted that the Drums of all the Hoisting Engines in the preceding pages of this catalogue are of the standard sizes for the hoisting of heavy loads at an ordinary good working speed. In addition to these small diameter drums we are prepared to furnish drums of any required diameter up to four feet, and in the following twenty pages we illustrate and list some of the more usual varieties of hoists equipped with these larger drums.

It is understood, of course, that as the diameter of the drum increases the load will be lifted proportionately faster, while the weight lifted decreases exactly in proportion as the speed increases. This is shown very clearly by the table of Weights and Speeds on the opposite page. A study of this table will be worth while to anyone contemplating the purchase of a High Speed Hoist.

As many of these High Speed Hoists are used for hauling loads up an incline we give below a table showing the proportion of the load that is carried by the hauling cable at different heights of incline. This table is approximately correct, and will be of much assistance in determining the capacity of Hoist necessary for a certain work.

We also give below some points which should be made clear when writing our office for prices. Attention to this in the first letter will save much delay in correspondence.

All the capacities of High Speed Hoists given in the following pages are the maximum gross loads lifted by the machines on a single line on a straight vertical lift. If the load is pulled up an incline the weight the Hoist will handle will be proportionately greater, as per the table below. The weight of cable, car, etc., must in every case be included in any estimate of the total load to be lifted.

TABLE OF INCLINES.

Pull on rope due to a load of one ton (2,000 lb.) up slopes up to 60°.

Angle in degrees	Corresponding elevation in 100 ft. or per cent. slope	Pull due to one ton with 40 lbs. allowance for friction	Angle in degrees	Corresponding elevation in 100 ft. or per cent. slope	Pull due to one ton with 40 lbs. allowance for friction
1	1·7	75	25	46.6	885
2	3·5	110	26	48·8	917
3	5·2	145	27	51·0	948
4	7·0	180	28	53·2	979
5	8·7	214	29	55·4	1010
6	10·5	249	30	57·7	1040
7	12·3	284	31	60·1	1070
8	14·1	318	32	62·5	1100
9	15·8	353	33	64·9	1129
10	17·6	387	34	67·5	1158
11	19·4	422	35	70·0	1187
12	21·3	456	36	72·7	1216
13	23·1	490	37	75·4	1244
14	24·9	594	38	78·1	1271
15	26·8	558	39	81·0	1299
16	28·7	591	40	83·9	1326
17	30·6	625	41	86·9	1352
18	32·5	658	42	90·0	1378
19	34·4	691	43	93·3	1404
20	36·4	724	44	96·6	1429
21	38·4	757	45	100·0	1454
22	40·4	789	50	120 0	1540
23	42·4	811	55	145·0	1650
24	44·5	853	60	175·0	1740

Note.—100 lbs. per ton of rope should be allowed for friction of rollers, drag, etc., in addition to allowance for rope as per table.

SUGGESTIONS.

In writing for prices or information about any of our Hoisting Engines, delays in correspondence will be avoided if the following points are made clear in the letter of enquiry:

The work for which the machine is intended.

The maximum load it will be expected to lift.

Whether for a straight lift or for hauling up an incline.

The speed per minute at which the load is to be lifted or hauled.

The maximum length of lift or haul.

If for hauling up an incline give the length of the incline (not the vertical height) and the steepness of the grade.

If a car is to be used to carry the load give estimated weight of the car.

Also say if the load is to be lifted with a single line, or with a single block, or with more than one block.

If it is a long haul and a varying incline give the angles of inclinations and the length of each incline, and whether a two speed machine is wanted. In any case be sure and give the angle or degree of the steepest part of the incline.

DRUM SCHEDULE.

Showing Capacities and Speeds of All our Hoisting Engines with various sizes of Drums.

Note.—The weights given in the table below are the weights lifted by the Hoist on a single line. The use of Blocks will increase the load handled, but lower the speed, as explained on page 5.

Horse Power of Engine as Usually Rated	Size of Cylinders		9 inch Drums		12 inch Drums		14 inch Drums		16 inch Drums		18 inch Drums		20 inch Drums		24 inch Drums		26 inch Drums		30 inch Drums		36 inch Drums		40 inch Drums		48 inch Drums	
	Bore Inches	Stroke Inches	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute	Weight Lifted	Hoisting Speed per Minute
10	5	7	2600	160	2000	210	1700	240	1650	250	1500	280	1300	315	1100	375	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	6¼	8	.....	.....	4000	160	3200	200	2900	220	2600	250	2375	270	2000	325	1800	350	1700	375	.....	.....	.....	.....	.....	.....
20	6¾	10	.....	.....	5500	150	4500	185	3900	210	3400	240	3200	260	2700	310	2450	340	2300	360	.....	.....	.....	.....	.....	.....
25	7	12	.....	.....	7000	140	5700	170	5100	190	4500	215	4000	240	3400	285	3100	310	2950	330	2450	395	2200	440	..	
32	8	12	.....	.....	.....	.....	8000	140	7100	165	6300	185	5700	205	4800	245	4400	265	3900	300	3200	365	2900	400	.	
40	9	12	.....	.....	.....	.....	.....	.....	10000	140	8000	180	7300	200	6000	240	5600	260	4850	300	4000	360	3650	400	3000	475
50	10	12	.....	.....	.....	.....	.....	.....	12500	140	10000	180	8900	200	7400	240	6900	260	5900	300	5000	360	4500	400	3800	475

Knowing the weight that has to be hoisted it will be easy for any one to determine the size of Hoist necessary for the work, by an examination of the above schedule. Then, by referring to the tables for that size of machine, as published in the succeeding pages, the depth of flanges, shipping weights, and telegraphic code words will be ascertained.

The above speeds and capacities are based on one hundred pounds steam pressure in the boiler, with a liberal allowance for loss of power due to friction and other causes. If the boiler pressure is less than one hundred pounds, the speed and capacity of the Hoist will be less accordingly.

It will be noted that the above table embraces all of our Hoists, whether with standard or special diameter of drums, and that the capacities and speeds on a single line under normal working conditions. We have known our Hoists to handle considerably more than the above loads at times, but in buying a Hoist the above figures should be taken as the maximum safe capacity of the machines.

MUSSENS LIMITED, MONTREAL
SALES AGENTS

MARSH & HENTHORN
LIMITED
BELLEVILLE
CANADA

STANDARD NON-REVERSING HIGH SPEED HOISTING ENGINES.

On this and the following three pages are illustrations and full schedules of our standard Single Drum, non-reversing Hoisting Engine, both with and without Boiler, and with both plain and grooved drum, and for all diameters of drums larger than the standard small diameter drum shown in the preceding pages. An illustration of the Grooved Drum will be found on page 57. The drum of this Hoist is loose on the shaft, and set in motion by our improved cone friction operated by our self-oiling Thrust Nut, as described on page 4.

The engines of this Hoist, being non-reversible, are used only for raising the load, while the empty bucket or car, etc., is lowered by its own weight, the speed of the descent being controlled by the powerful band brake on the drum.

All Boilers for these Hoists are the same size as for the corresponding size of standard Drum Hoists on pages 8 to 21.

10 Horse Power, Double 5 x 7 Cylinders.

Single Friction Drum, non-reversing High Speed Hoist.

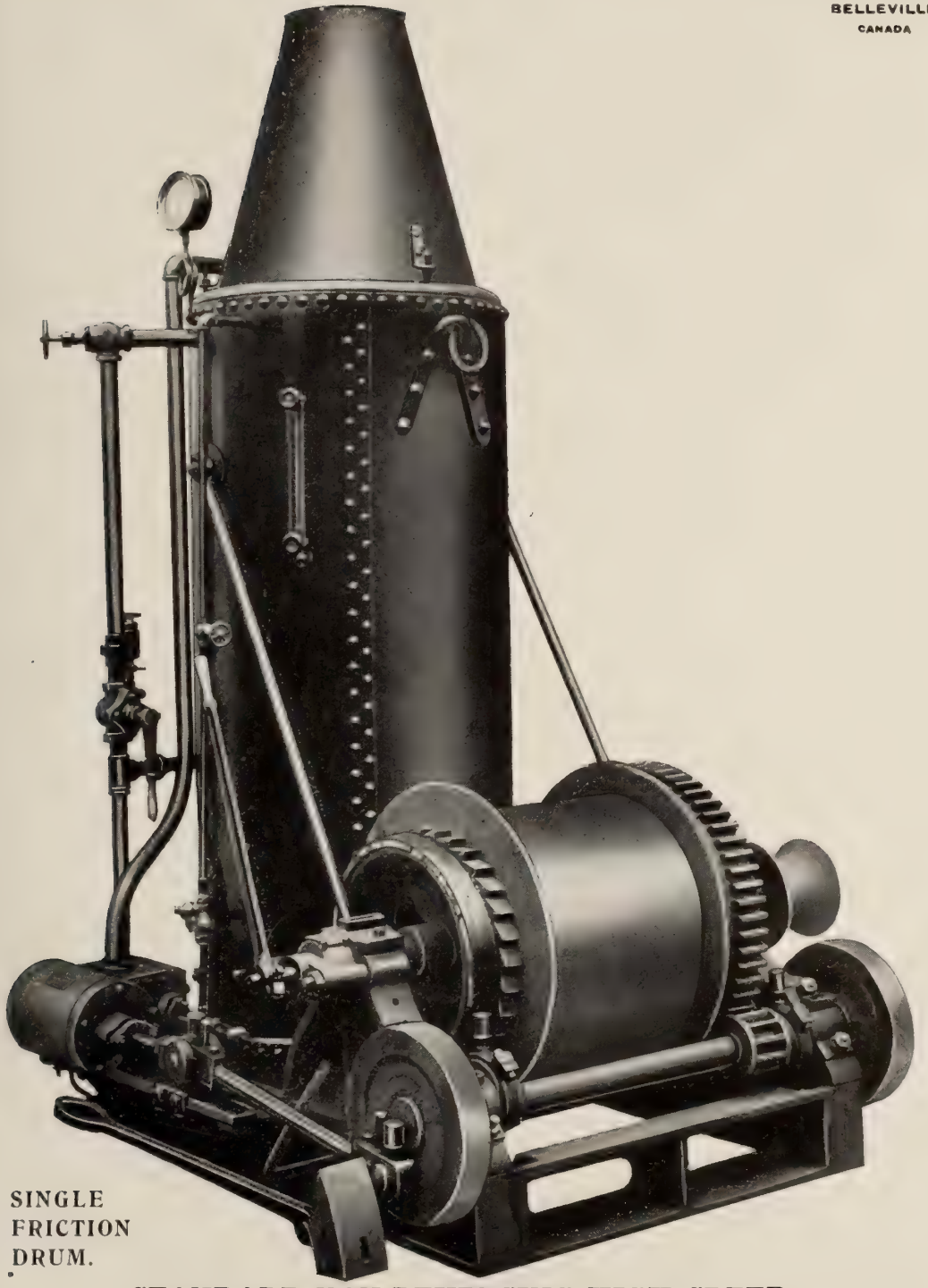
Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line LBS.	Speed of Lift per Minute FEET	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
9	4½	2600	160	1900	3500	Ecdemite	Haggai	Encrinus	Herderite
12	2¾	2000	210	1950	3550	Encyclical	Hydrophobe	Endemic	Herdic
14	1¾	1700	240	2000	3600	Encyst	Herborow	Eyelash	Herdwick
16	4	1650	250	2150	3750	Encystis	Hereogamy	Enderon	Herebode
18	3	1500	280	2200	3800	Encystment	Heritor	Endite	Heredity
20	2	1300	315	2250	3850	Endecane	Herculean	Endocarp	Hereford
24	3	1100	375	2400	4000	Endeixis	Herdboy	Endoceras	Herenach

15 Horse Power, Double 6½ x 8 Cylinders.

Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line LBS.	Speed of Lift per Minute FEET	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	5	4000	160	3100	5300	East	Hair	Endochona	Herisson
14	4	3200	200	3190	5400	Endochyme	Heretic	Endomorph	Heritage
16	3	2900	220	3280	5480	Edict	Fider	Endophyte	Hermes
18	2	2600	250	3370	5570	Endocone	Heretoch	Endopleura	Hermetic
20	3	2375	270	3600	5800	Endocyst	Heretoga	Endopodite	Hermod
24	3	2000	325	3700	5900	Edify	Eject	Endoscope	Hydroyon
26	2	1800	350	3800	6000	Endolymph	Heriot	Endosperm	Hernandia
30	3½	1700	375	4140	6540	Edit	Eke	Endotheca	Hernshaw

The many repeat orders we have had from contractors furnish the best testimonial we can offer as to the merits of our Hoisting Engines. Some contractors have been buying our machines for many years.



SINGLE
FRICTION
DRUM.

STANDARD NON-REVERSING HIGH SPEED HOISTING ENGINE.

Schedules of sizes and capacities for all sizes of Drums on pages 46, 48 and 49.

20 Horse Power, Double 6¾ x 10 Cylinders

Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line LBS.	Speed of Lift per Minute FEET	Estimated Shipping Weight without Boiler	Estimated Shipping Weight with Boiler	Codeword of Hoist with Plain Drum without Boiler	Codeword of Hoist with Plain Drum with Boiler	Codeword of Hoist with Grooved Drum without Boiler	Codeword of Hoist with Grooved Drum with Boiler
12	6	5500	150	3700	6400	Easter	Hairbrush	Endosmose	Herpes
14	5	4500	185	3800	6500	Endogen	Heresy	Endostome	Hersal
16	4	3900	210	3900	6600	Edition	Hustings	Endozoa	Herschel
18	3	3400	240	4000	6700	Eadome	Herodian	Endugine	Herse
20	3	3200	260	4200	6900	Endoplasm	Heroology	Endyma	Hersilon
24	3	2700	310	4300	7000	Editor	Elate	Endysis	Hertespon
26	2	2450	340	4400	7100	Endosis	Heroud	Enecia	Hertha
30	3½	2300	360	4800	7500	Educate	Elder	Eneid	Hertzian

25 Horse Power, Double 7 x 12 Cylinders

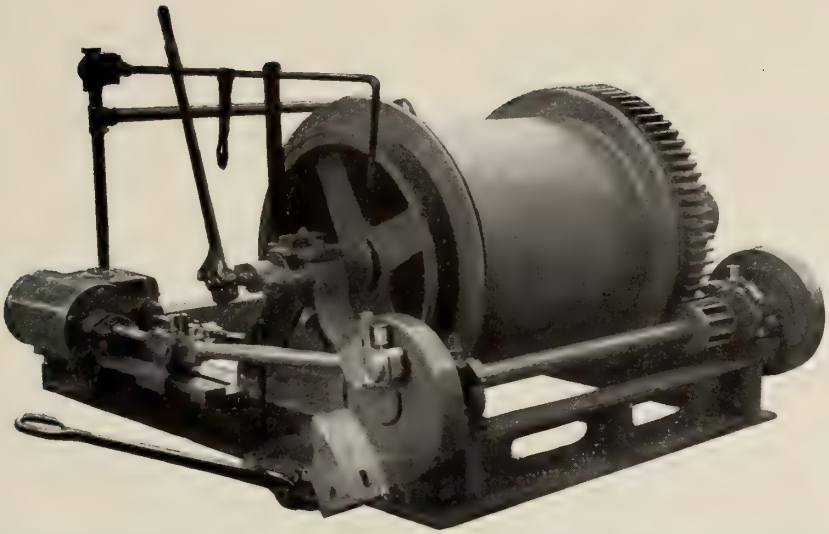
Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line LBS.	Speed of Lift per Minute FEET	Estimated Shipping Weight without Boiler	Estimated Shipping Weight with Boiler	Codeword of Hoist with Plain Drum without Boiler	Codeword of Hoist with Plain Drum with Boiler	Codeword of Hoist with Grooved Drum without Boiler	Codeword of Hoist with Grooved Drum with Boiler
12	7	7000	140	4300	7500	Easteregg	Haircloth	Engiscope	Hessonite
14	6	5700	170	4400	7600	Energumen	Hesiod	Engisoma	Hesternal
16	5	5100	190	4500	7700	Enfirm	Hesitant	Englacial	Hestia
18	4	4500	215	4600	7800	Enfilade	Hesper	Englislet	Heshvan
20	3	4000	240	4700	7900	Eface	Eldest	Engobe	Hesychast
24	3	3400	285	4850	8000	Enfleurage	Hesperia	Eyesore	Hetaira
26	2	3100	310	5000	8200	Effigy	Elect	Enhydrite	Heteromeri
30	3	2950	330	5100	8600	Egg	Elegy	Enlegeance	Heteronym
36	3	2450	395	5700	8900	Enfray	Hessian	Enmanche	Hetman
40	2	2200	440	5800	9000	England	Hessite	Enmious	Heuch

32 Horse Power, Double 8 x 12 Cylinders

Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line LBS.	Speed of Lift per Minute FEET	Estimated Shipping Weight without Boiler	Estimated Shipping Weight with Boiler	Codeword of Hoist with Plain Drum without Boiler	Codeword of Hoist with Plain Drum with Boiler	Codeword of Hoist with Grooved Drum without Boiler	Codeword of Hoist with Grooved Drum with Boiler
14	9½	8000	140	5350	9000	Easterly	Hairpin	Enodation	Heulandite
16	8½	7100	165	5500	9200	Eyelet	Hierology	Enology	Heuretic
18	7½	6300	185	5600	9300	Ennead	Hieron	Enomoty	Heuristic
20	6½	5700	205	5700	9400	Ennis	Highbinder	Enopla	Heurts
24	4½	4800	245	5800	9500	Ennui	Highhoe	Enoplus	Heveene
26	3½	4400	265	5900	9600	Eggnog	Elephant	Enoplios	Hexace
30	2	3900	300	6000	9700	Eggplant	Elf	Enostosis	Hexachord
36	2½	3200	365	6400	10000	Egoism	Elfin	Ens	Hedonism
40	2	2900	400	6500	10200	Enodal	Higre	Entia	Hexane



STANDARD NON-REVERSING MINING HOIST.

With One Drum and No Boiler.

See page 47 for this Hoist with Boiler.

40 Horse Power, Double 9 x 12 Cylinders

Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	10000	140	9000	13600	Eastward	Hairspring	Entad	Hexylic
18	10	8000	180	9100	13700	Ensiform	Hexapod	Entasis	Hexad
20	9	7300	200	9200	13800	Ensilage	Hexaster	Entassment	Heyduc
24	7	6000	240	9300	13900	Ensise	Hexastitch	Entoche	Heyne
26	6	5600	260	9400	14000	Egoist	Elfish	Entelechy	Hiaqua
30	6½	4850	300	9500	14100	Egress	Elider	Entellus	Hiatus
36	3½	4000	360	9700	14300	Egret	Elite	Entencion	Hibernacle
40	2	3650	400	10000	14600	Enstatite	Hexoyl	Entente	Hibuscus
48	5	3000	475	11000	15600	Entaconid	Hexylene	Enteritis	Hibrid

50 Horse Power, Double 10 x 12 Cylinders

Single Friction Drum, non-reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	12500	140	10000	16200	Ecderon	Hagmena	Entocha	Hiccup
18	10	10000	180	10100	16300	Enteron	Hicksite	Entoblast	Hidrosis
20	9	8900	200	10200	16400	Enterotome	Hickwall	Entoconcha	Hielmite
24	7	7400	240	10300	16500	Entheasm	Hicoria	Entoectad	Hiems
26	6	6900	260	10400	16600	Entheos	Hicotee	Entolithia	Hiera
30	6½	5900	300	10500	16700	Enthetic	Hidage	Entomere	Hierarch
36	3½	5000	360	10700	17000	Enthlasis	Hildago	Entophyte	Hieratite
40	2	4500	400	11000	17200	Enthymene	Hiddenite	Entoprocta	Hieroglyph
48	5	3800	475	12000	18000	Entiris	Hideling	Entoptic	Hierogram

SINGLE FRICTION DRUM, REVERSING HIGH SPEED HOISTING ENGINE.

This High Speed Reversing Hoist is exactly the same as the non-reversing Hoist shown on the preceding pages, but by reason of the addition of the reversing motion is adapted for a greater variety of work. The load is under perfect control, either ascending or descending. This is essential when heavy loads have to be lowered. In mining work this Hoist can be made to operate two cages or cars at once, one ascending and the other descending. For this purpose, a grooved drum is preferable, hence we list both kinds, plain and grooved. The grooved drum is illustrated on page 57.

The Drum of this Hoist is operated by our improved Cone Friction, and is therefore loose on the shaft, and the load or empty bucket or car may be lowered without the steam by the use of the powerful band brake. But for lowering a heavy load, or a cage with men in it, it is better to lock the drum in friction by the use of the notched quadrant and lower by steam, under the perfect control of the operator.

All Boilers for this Hoist are the same sizes as for the corresponding sizes of standard Drum Hoists on pages 8 to 21.

10 Horse Power, Double 5 x 7 Cylinders

Single Friction Drum, Reversing High Speed Hoist.

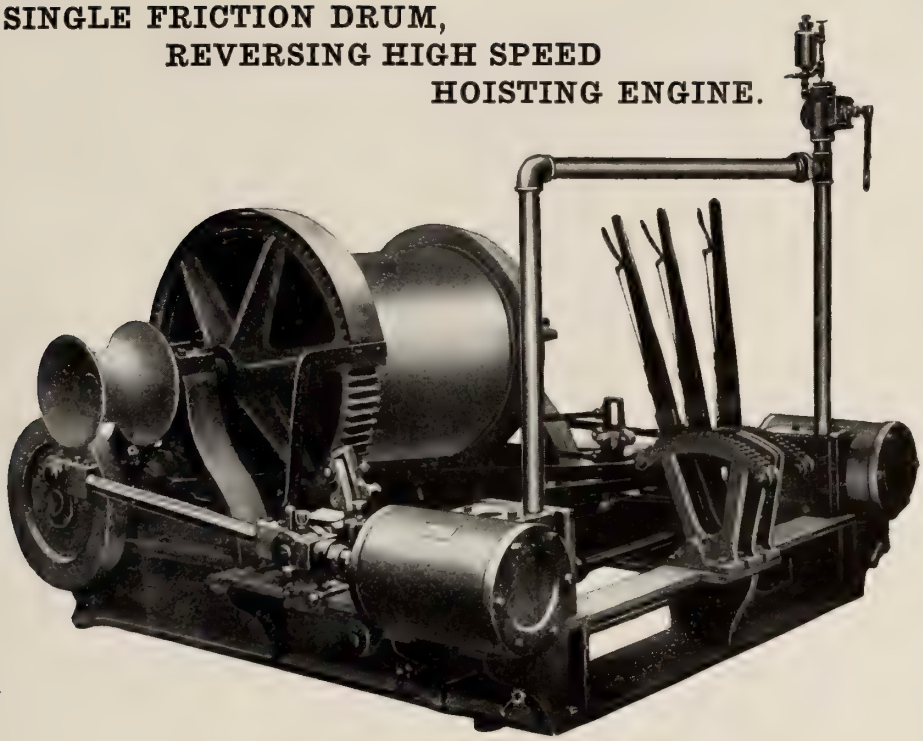
Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
9	4½	2600	160	2250	3850	Echelon	Haiduk	Entonic	Hildebrand
12	2½	2000	210	2300	3900	Entozoa	Higtaper	Entortill	Hillwort
14	1½	1700	240	2350	3950	Ention	Hike	Entourage	Hillock
16	4	1650	250	2500	4100	Entmoid	Hila	Entrechat	Himalayes
18	3	1500	280	2550	4150	Entomolin	Hilum	Entremets	Himation
20	2	1300	315	2600	4200	Entomotaxy	Hilaria	Entrepas	Himavat
24	3	1100	375	2750	4350	Entomology	Hilarymas	Entresol	Himpne

15 Horse Power, Double 6½ x 8 Cylinders

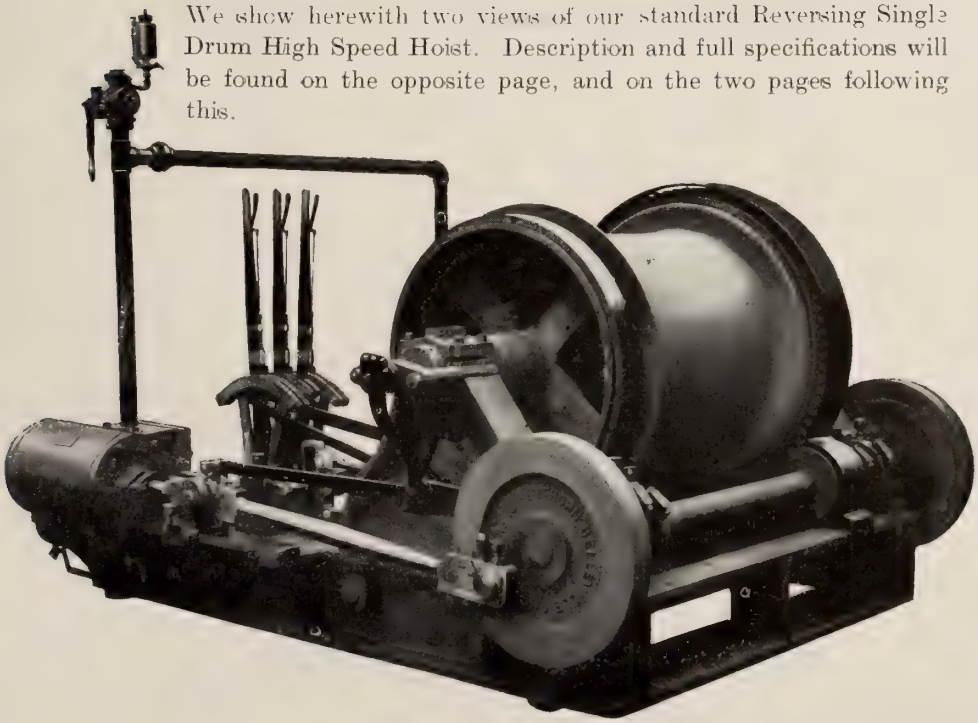
Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	5	4000	160	3600	5800	Echeum	Hake	Entropy	Hindi
14	4	3200	200	3700	5900	Entrete	Himyarite	Entryng	Hindooism
16	3	2900	220	3780	6000	Enemy	Entity	Enturret	Hindustani
18	2	2600	250	3870	6100	Entrike	Hinny	Enubilous	Hineberry
20	3	2375	270	4100	6300	Entrochite	Hinautree	Enucleate	Hingle
24	3	2000	325	4200	6400	Enfold	Envoy	Enuresis	Hink
26	2	1800	350	4300	6500	Entropion	Hinchboy	Enurny	Hinoid
30	3½	1700	375	4650	6840	English	Epiod	Enveron	Hipparion

SINGLE FRICTION DRUM, REVERSING HIGH SPEED HOISTING ENGINE.



We show herewith two views of our standard Reversing Single Drum High Speed Hoist. Description and full specifications will be found on the opposite page, and on the two pages following this.



20 Horse Power, Double 6¾ x 10 Cylinders

Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	6	5500	150	4200	6900	Echidna	Haiver	Eocene	Hippidae
14	5	4500	185	4300	7000	Envisage	Hippa	Eogaea	Hippid
16	4	3900	210	4400	7100	Engrain	Evebrow	Eolian	Hippobosca
18	3	3400	240	4500	7200	Enzootic	Hippelagh	Eolipae	Hippodame
20	3	3200	260	4600	7400	Enzyme	Hippian	Eolina	Hippogony
24	3	2700	310	4800	7500	Engrave	Epicure	Eolipile	Hippoid
26	2	2450	340	4900	7600	Eosin	Hippiater	Eolism	Hippolita
30	3½	2300	360	5300	8000	Engross	Epigram	Eolistic	Hippolyte

25 Horse Power, Double 7 x 12 Cylinders

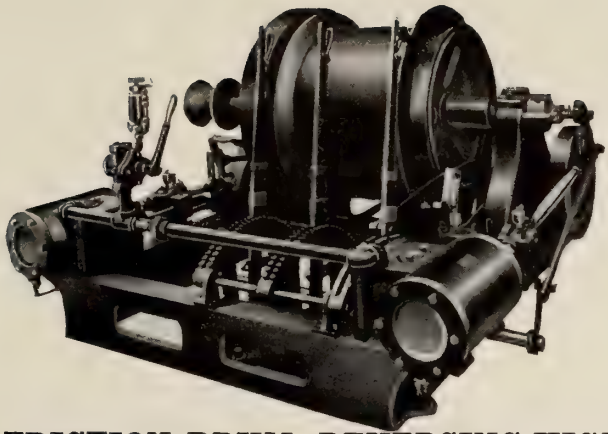
Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	7	7000	140	4800	8000	Eyré	Hakim	Eos	Hippetyhop
14	6	5700	170	4900	8100	Eolithic	Hippolytid	Eosin	Hippius
16	5	5100	190	5000	8200	Eolodion	Hipponyx	Eosphorite	Hippocras
18	4	4500	215	5100	8300	Eolophon	Hippopath	Eozoic	Hippocrene
20	3	4000	240	5200	8400	Enigma	Epigraph	Eozoon	Hippodrome
24	3	3400	285	5400	8500	Eolotropy	Hippophile	Epacme	Hippogeny
26	2	3100	310	5500	8700	Enjoin	Epilogue	Epacris	Hippogrif
30	3	2950	330	5900	9100	Enlist	Epistle	Epactus	Hippology
36	3	2450	395	6200	9400	Eophyte	Hippotomy	Epactal	Hippomane
40	2	2200	440	6300	9500	Eolic	Hippings	Epagoge	Hippuric

32 Horse Power, Double 8 x 12 Cylinders

Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
14	9½	8000	140	6000	9600	Echolali	Hakot	Epanthous	Hircine
16	8½	7100	165	6100	9800	Epalpate	Hippurite	Epappose	Hirmos
18	7½	6300	185	6200	9900	Epanophora	Hippus	Eparch	Hirple
20	6½	5700	205	6300	10000	Epanodonta	Hipsy	Eparchean	Hirrient
24	4½	4800	245	6400	10100	Epanodos	Hipwort	Epatka	Hirsel
26	3½	4400	265	6500	10200	Enrage	Epitaph	Epaulet	Hirst
30	2	3900	300	6600	10300	Enroll	Hyacinth	Epaxial	Hirsute
36	2½	3200	365	7000	10600	Ensign	Epsom	Epeira	Hirundin
40	2	2900	400	7100	10800	Epanody	Hircic	Eperridae	Hispanic



SINGLE FRICTION DRUM, REVERSING HIGH SPEED HOISTING ENGINE.

Above is another view of our Reversible High Speed Single Drum Hoist. This shows the levers arranged lower down in the frame than in the illustrations on page 51. The steam pipe is also lower. We will arrange these levers or the steam pipe whichever way a customer desires them, but the arrangement on page 51 will be sent unless otherwise ordered.

40 Horse Power, Double 9 x 12 Cylinders

Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drums in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	10000	140	9600	14200	Echometer	Haku	Epeolatry	Historian
18	10	8000	180	9700	14300	Epeirote	Hispid	Epergne	Histozyme
20	9	7300	200	9800	14400	Ependyma	Histioid	Eperlan	Histrio
24	7	6000	240	9900	14500	Ependytes	Histology	Eperotesis	Hithmite
26	6	5600	260	10000	14600	Entail	Equator	Ephah	Hitchcock
30	6½	4850	300	10100	14700	Enteric	Equerry	Ephebe	Hithe
36	3½	4000	360	10300	14900	Enthuse	Equinox	Ephebus	Hitopadesa
40	2	3650	400	10600	15200	Epenetic	Histolysis	Ephectic	Hittite
48	5	3000	475	11600	16200	Epenthesis	Histopedes	Ephelis	Hive

50 Horse Power, Double 10 x 12 Cylinders

Single Friction Drum, Reversing High Speed Hoist.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	12500	140	10600	16800	Eciton	Halacha	Ephorus	Hobnail
18	10	10000	180	10700	16900	Ephemera	Hiwihiwi	Ephorate	Hobo
20	9	8900	200	10800	17000	Ephemerite	Hizzie	Ephraitic	Hobomokko
24	7	7400	240	10900	17100	Ephesian	Hoazin	Ephydriad	Hobthrush
26	6	6900	260	11000	17200	Ephete	Hobbet	Ephymnium	Hocco
30	6½	5900	300	11100	17300	Ephialtes	Hobbism	Ephyra	Hock
36	3½	5000	360	11300	17600	Ephidrosis	Hobby	Epi	Hockcart
40	2	4500	400	11600	17800	Ephippium	Hobit	Epialidae	Hockamore
48	5	3800	475	12600	18600	Eyry	Hoblob	Epiaxial	Hockday

REVERSING HIGH SPEED HOISTING ENGINE.

With Drum Keyed Fast to Shaft.

This style of Hoist is particularly adapted for handling loads both up and down, either in a mine or on any incline. The drum, being keyed fast to the shaft, cannot rotate in either direction except under steam pressure in the engines, so there is no possibility of the load getting out of control through slipping of friction or brake. This arrangement does away with the necessity of locking the drum in friction when lowering the load, as is the case in the friction drum hoists shown on pages 50 to 53.

This is a safe and reliable type of Hoist, and while the load or empty car or cage will not perhaps lower as rapidly as in a friction driven hoisting engine, this is compensated for by the perfect security afforded the men when being lowered.

Two cars or cages can be operated at once with this Hoist, one going up and the other going down. For this work a grooved drum such as shown on page 57 is perhaps better than the smooth drum. In either case the depth that both cars or cages can be worked is limited by the length of cable that can be wound on the drum in a single lap.

The illustration on the opposite page shows the two levers arranged in quadrants beside the boiler. This is charged as an extra, and unless otherwise specified, this Hoist with boiler will have the levers in the usual position as shown on pages 20 and 21. When shipped without boiler, the levers will be arranged in quadrants on the rear frame between the cylinders, unless ordered otherwise.

All boilers for this Hoist are the same size as for the corresponding sizes of standard drum hoists on pages 8 to 21.

10 Horse Power High Speed Hoist, Double 5 x 7 Cylinders.

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
9	4½	2600	160	2200	3800	Epibasal	Hocket	Epicanthus	Hodgepodge
12	2¾	2000	210	2250	3850	Epibatus	Hocktide	Epicardium	Hodiernal
14	1¾	1700	240	2300	3900	Epiblast	Hocus	Epicarp	Hodja
16	4	1650	250	2450	4000	Epiblema	Hodden	Epicedian	Hodman
18	3	1500	280	2500	4100	Epibole	Hoddy	Epicene	Hodograph
20	2	1300	315	2550	4200	Epibolism	Hoder	Epicenter	Hodometer
24	3	1100	375	2700	4300	Epicalyx	Hodge	Epicerie	Hodthai

15 Horse Power High Speed Hoist, Double 6½ x 8 Cylinders

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	5	4000	160	3550	5750	Epichordal	Hoedown	Epicnemis	Hogcote
14	4	3200	200	3650	5850	Epichorion	Hoax	Epicoela	Hoggum
16	3	2900	220	3730	5930	Elk	Emblem	Epicolic	Hoggard
18	2	2600	250	3800	6000	Epicism	Hoener	Epicostal	Hogmane
20	3	2375	270	4000	6250	Epiclastic	Hogape	Epicotyl	Hognut
24	3	2000	325	4150	6350	Elogy	Emboss	Epicrasis	Hograt
26	2	1800	350	4250	6450	Epiclinal	Hogbean	Epictetian	Hogster
30	3½	1700	375	4600	6800	Elope	Embryo	Epicycle	Hogback

REVERSING HIGH SPEED HOISTING ENGINE.

With Drum Keyed Fast to Shaft.

Description and full specifications of these engines will be found on the opposite page, and on the two pages following this.

20 Horse Power High Speed Hoist, Double 6¾ x 10 Cylinders

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	6	5500	150	4150	6850	Epicycloid	Hogfish	Epidentral	Hogmolly
14	5	4500	185	4250	7000	Epicvemate	Hoggerel	Epidentrum	Hoki
16	4	3900	210	4350	7100	Elude	Emetic	Epiderm	Holcad
18	3	3400	240	4450	7200	Epicyesis	Hogget	Epidermata	Holcodont
20	3	3200	260	4650	7350	Epideictic	Hoglin	Epidermine	Holethnos
24	3	2700	310	4750	7450	Elusive	Emir	Epidictic	Holetra
26	2	2450	340	4850	7550	Epidemic	Hogmenay	Epidiorite	Hollin
30	3½	2300	360	5250	8000	Elusory	Empire	Epidosite	Holly

25 Horse Power, Double 7 x 12 Cylinders

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	7	7000	140	4750	8000	Epidote	Hollyhock	Epigenesis	Holopus
14	6	5700	170	4850	8100	Epidural	Holm	Epegenite	Holopia
16	5	5100	190	5000	8200	Epigaea	Holmium	Epigeous	Holopoda
18	4	4500	215	5100	8300	Epigamic	Holomorphy	Epiglottis	Holoptic
20	3	4000	240	5200	8400	Exultant	Empress	Epigonal	Holster
24	3	3400	285	5300	8500	Epigaster	Holophote	Epigone	Holostean
26	2	3100	310	5450	8700	Emaciate	Emu	Epigonion	Holosteric
30	3	2950	330	6000	9100	Emanate	Emulate	Epigynous	Holostome
36	3	2450	395	6200	9400	Epigee	Holophrase	Epihyal	Holostraca
40	2	2200	440	6300	9500	Eyot	Holopidae	Epilabrum	Holothecal

32 Horse Power, Double 8 x 12 Cylinders

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
14	9½	8000	140	5900	9600	Epilate	Holoblast	Epimerite	Homaloid
16	8½	7100	165	6100	9700	Epilepsy	Holocaust	Epimysium	Homalopsis
18	7½	6300	185	6200	9800	Epilobe	Holograph	Epimyth	Homarus
20	6½	5700	205	6300	9900	Epilogism	Holohedron	Epinaos	Hombre
24	4½	4800	245	6400	10100	Epimachus	Holstein	Epinasty	Homeoid
26	3½	4400	265	6500	10200	Embalm	Enact	Epinette	Homerian
30	2	3900	300	6600	10300	Embank	Enamel	Epineural	Homiform
36	2½	3200	365	7000	10600	Embarkage	Encage	Epinglette	Homilete
40	2	2900	400	7100	10800	Epimere	Homager	Epinicion	Homilist

40 Horse Power, Double 9 x 12 Cylinders

Reversing, with Single Drum Keyed Fast to Shaft.

Diameter fo Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	10000	140	9600	14200	Epinyctis	Hominidae	Epiphyllum	Homodemic
18	10	8000	180	9700	14300	Epionic	Hommock	Epiphysis	Homodont
20	9	7300	200	9800	14400	Epiornis	Homobaric	Epiphyte	Homogamy
24	7	6000	240	9900	14500	Epiotic	Homocerc	Epiplasm	Homopathy
26	6	5600	260	10000	14600	Embassy	Encamp	Epipleur	Homophyly
30	6½	4850	300	10100	14700	Embers	Encore	Epipleuron	Homotonus
36	3½	4000	360	10300	14900	Embezzle	Endow	Epiplexis	Homotropal
40	2	3650	400	10600	15200	Epiphora	Homochiral	Epiploce	Homotrophe
48	5	3000	475	11600	16200	Epiphragm	Homocoela	Epiploon	Homotatic

REVERSING FRICTION DRUM HIGH SPEED HOISTING ENGINE.

With Single Drum Grooved in Lathe.

We furnish these lathe grooved drums, if desired, on any of the high speed Hoists shown in the preceding pages, as will be noted by the detail lists.

50 Horse Power, Double 10 x 12 Cylinders

Reversing, with Single Drum keyed fast to shaft.

Diameter of Drum in Inches	Depth of Flange	Load Lifted on a Single Line Pounds	Speed of Lift per Minute in Feet	Estimated Shipping Weight		Codeword of Hoist with Plain Drum		Codeword of Hoist with Grooved Drum	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	12500	140	10600	16800	Epipodial	Homogen	Epirrhema	Homotype
18	10	10000	180	10700	16900	Epipodite	Homograph	Episcleral	Hondo
20	9	8900	200	10800	17000	Epipolism	Homologon	Episcopant	Honey
24	7	7400	240	10900	17100	Epipsyche	Homomorph	Episcopus	Honewort
26	6	6900	260	11000	17200	Epiptere	Homonym	Episemon	Hong
30	6½	5900	300	11100	17300	Epipterous	Homophone	Epispastic	Honker
36	3½	5000	360	11300	17600	Epirhizous	Homoplast	Episperm	Honovar
40	2	4500	400	11600	17800	Epirogeny	Homoptera	Epistaxis	Hooka
48	5	3800	475	12600	18600	Epirote	Homotaxis	Epistom	Hookum

DOUBLE FRICTION DRUM, REVERSIBLE HIGH SPEED HOISTING ENGINE.

This Double Drum high speed Hoisting Engine illustrated on the opposite page, and also on page 61, is exactly the same in all respects as the Standard Contractor's Hoisting Engines shown on pages 9 to 12, except for the difference in the size of the drums. As will be noted by the list of sizes herewith, we are prepared to supply any size of drum up to 48 inches diameter on these engines. We will also supply grooved drums if required.

Full specifications will be found on this page, and on pages 60 and 61. All Boilers for these Hoists are the same sizes and specifications as for the corresponding sizes of Engines on pages 8 to 21.

10 Horse Power, Double 5 x 7 Cylinders

Double Drum High Speed Hoisting Engines.

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
9	4½	2600	160	2800	4400	Eagle	Homebase	Earl	Homicide
12	2¾	2000	210	2900	4500	Epistrophy	Hoolie	Epithesis	Hooven
14	1¾	1700	240	3000	4600	Epistyle	Hoolock	Epithite	Hopeite
16	4	1650	250	3200	4800	Epitasis	Hoondee	Epitimesis	Hoplopid
18	3	1500	280	3300	4900	Epitela	Hoople	Epitonion	Hopo
20	2	1300	315	3400	5000	Epitheca	Hoosier	Epitrope	Hoppet
24	3	1100	375	3600	5200	Epithem	Hoopoo	Epiural	Horal

15 Horse Power, Double 6½ x 8 Cylinders

Double Drum High Speed Hoisting Engines.

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	5	4000	160	4700	6900	Earth	Homeless	Earring	Homerun
14	4	3200	200	4880	7100	Epizeuxis	Horratian	Epode	Hoot
16	3	2900	220	5190	7300	Ergo	Hydrangea	Eponym	Hornbeak
18	2	2600	250	5240	7450	Epizoa	Hordein	Eponymos	Hornbill
20	3	2375	270	5680	7900	Epizoon	Hordeolum	Epopee	Hornblende
24	3	2000	325	5860	8100	Ermine	Euchre	Epopt	Hornet
26	2	1800	350	6100	8300	Eplicate	Horehound	Eporose	Hornito
30	3½	1700	375	6700	8900	Erotic	Eulogy	Epos	Hornotine

20 Horse Power, Double 6¾ x 10 Cylinders

Double Drum High Speed Hoisting Engines.

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	6	5500	150	5400	8100	Earthborn	Homely	~~Epos~~ Earwig	Homesick
14	5	4500	185	5600	8300	Epotation	Hornpipe	Epulis	Horometer
16	4	3900	210	5800	8500	Erudite	Eunuch	Epulosis	Horopter
18	3	3400	240	6000	8700	Epsilon	Hornwort	Epure	Horoscope
20	3	3200	260	6400	9100	Epsomite	Horograph	Epyornis	Horrent
24	3	2700	310	6600	9300	Escapade	Euphony	Equation	Hortation
26	2	2450	340	6800	9500	Epulary	Horologe	Equestrian	Hortulan
30	3½	2300	360	7500	10200	Eskimo	Evangel	Equipede	Horus

DOUBLE DRUM REVERSIBLE HIGH SPEED HOISTING ENGINE.

25 Horse Power, Double 7 x 12 Cylinders

Double Drum High Speed Hoisting Engines

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
12	7	7000	140	6100	9300	Earthly	Homemade	Eclipse	Homespun
14	6	5700	170	6300	9500	Equidae	Hosea	Equitoon	Hospodar
16	5	5100	190	6500	9700	Equinia	Hyperbole	Equivoque	Hosticide
18	4	4500	215	6700	9900	Equipoise	Hosier	Equivolt	Hostie
20	3	4000	240	6900	10100	Espial	Evict	Equoid	Hostry
24	3	3400	285	7200	10400	Equisetum	Hospice	Equus	Hostship
26	2	3100	310	7500	10700	Espouse	Evil	Erack	Hotar
30	3	2950	330	8100	11300	Essay	Evoke	Eranos	Hotch
36	3	2450	395	8800	12000	Equison	Hospitage	Erasmian	Hoten
40	2	2200	440	9000	12200	Equites	Hospitium	Erato	Hotri

32 Horse Power, Double 8 x 12 Cylinders

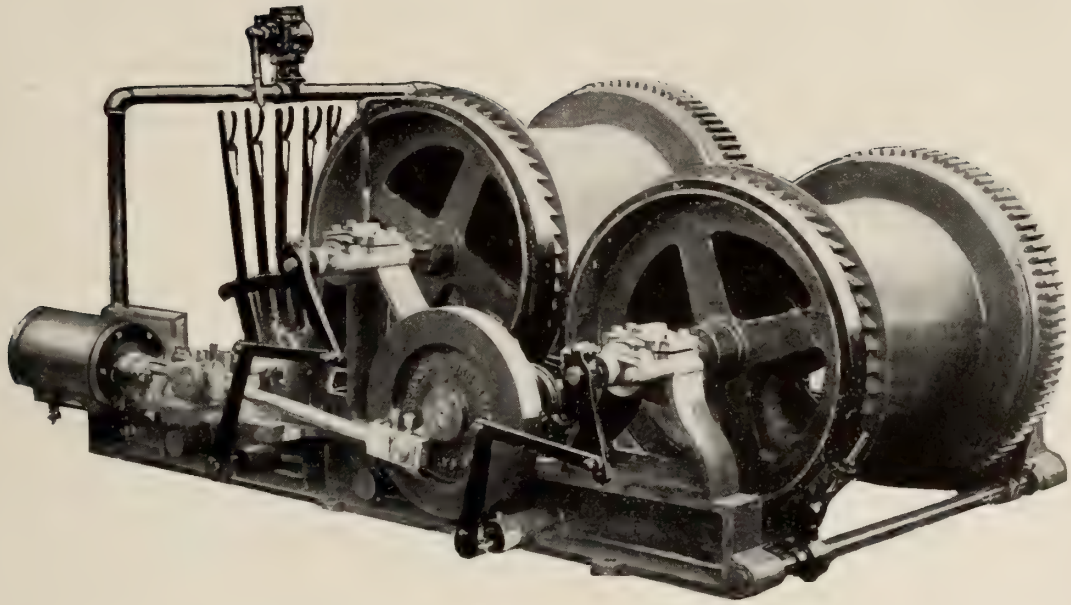
Double Drum High Speed Hoisting Engines

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
14	9½	8000	140	8400	12100	Earthquake	Homer	Eczema	Homestead
16	8½	7100	165	8600	12300	Erbia	Hotspur	Eresidae	Hounce
18	7½	6300	185	8800	12500	Erebus	Hottentot	Eretian	Houriar
20	6½	5700	205	9000	12700	Eremite	Houbara	Erf	Housage
24	4½	4800	245	9200	12900	Erenach	Houdan	Ergal	Housbond
26	3½	4400	265	9400	13100	Estate	Evolute	Eyesight	Hyphen
30	2	3900	300	9600	13300	Estreat	Exalt	Ergotism	Houseling
36	2½	3200	365	10400	14100	Etch	Example	Eria	Houstonia
40	2	2900	400	10600	14300	Eresus	Hough	Erica	Houstrie

40 Horse Power, Double 9 x 12 Cylinders

Double Drum High Speed Hoisting Engines.

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line. Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	10000	140	12400	17000	Earthwork	Homerule	Exorcism	Homeward
18	10	8000	180	12600	17200	Ericthus	Housty	Erineum	Howadji
20	9	7300	200	12800	17400	Ericius	Houtah	Eringo	Howdah
24	7	6000	240	13000	17600	Eridanus	Houtou	Erinite	Howel
26	6	5600	260	13200	17800	Eternal	Excerpt	Erinose	Howitzer
30	6½	4850	300	13400	18000	Ether	Excrete	Erinys	How ker
36	3½	4000	360	13800	18409	Ethic	Hysteria	Eriocomi	Hypocrite
40	2	3650	400	14400	19000	Erigeron	Hova	Eriometer	Howlite
48	5	3000	475	16400	20500	Eriglossa	Hygiene	Eristalis	Howqua



DOUBLE DRUM REVERSIBLE HIGH SPEED HOISTING ENGINE.

Without Boiler.

Illustration of this Hoist with Boiler on page 59. Tabulated lists of sizes and capacities of drums and engines on this and the three pages preceding this.

50 Horse Power, Double 10 x 12 Cylinders

Double Drum High Speed Hoisting Engines.

Diameter of Drums in inches	Depth of Flange	Load lifted on a single line Pounds	Speed of lift per min. in feet	Estimated Shipping Weight		Code Words of Non-Reversing Hoist		Code Words of Reversing Hoist	
				without Boiler	with Boiler	without Boiler	with Boiler	without Boiler	with Boiler
16	11	12500	140	13400	19600	Earldom	Hominy	Exotic	Homo
18	10	10000	180	13600	19800	Eristic	Hox	Erodent	Hubnerite
20	9	8900	200	13800	20000	Erke	Hoyden	Eros	Hubshee
24	7	7400	240	14000	20200	Erlking	Hoyman	Erostate	Huccatoon
26	6	6900	260	14200	20400	Ermelin	Hrimfaxe	Eroteme	Hucho
30	6½	5900	300	14400	20700	Evetooth	Huacal	Erotesis	Huckaback
36	3½	5000	360	14900	21000	Erminites	Huanaco	Errabund	Huckmuck
40	2	4500	400	15400	21400	Erminois	Hubbite	Errantia	Huckson
48	5	3800	478	17400	23400	Erratic	Hubble	Errhine	Huckster

Do not use the Drum Thrust Friction of any of our Hoisting Engines for lowering the load. It is not intended for that purpose, and when so used will wear out quickly. A Brake is provided for that purpose.

HIGH SPEED MINING HOIST.

Drums Side by Side.

The type of High Speed Mining Hoist shown on the opposite page is used extensively among the deeper mines for the simultaneous operation of two shafts. The machine is strong and well made in every detail, and will safely stand any strain that may be put on it up to the limits listed herewith.

Both drums of this Hoist are friction driven, and may be operated separately or simultaneously, as may be needful. The machine in the illustration is reversible, so the load may be handled under perfect steam control, either going up or down, or, if desired, the descending load may be allowed to lower by its own weight, controlled by the operator by means of the powerful band brake.

We also make these Hoists non-reversing, in which case the empty cage or bucket always descends by its own weight. The reversing engine, however, is preferred by most miners where men have to be lowered in the cages.

25 Horse Power, Double 7 x 12 Cylinders

High Speed Mining Hoist, Drums Side by Side.

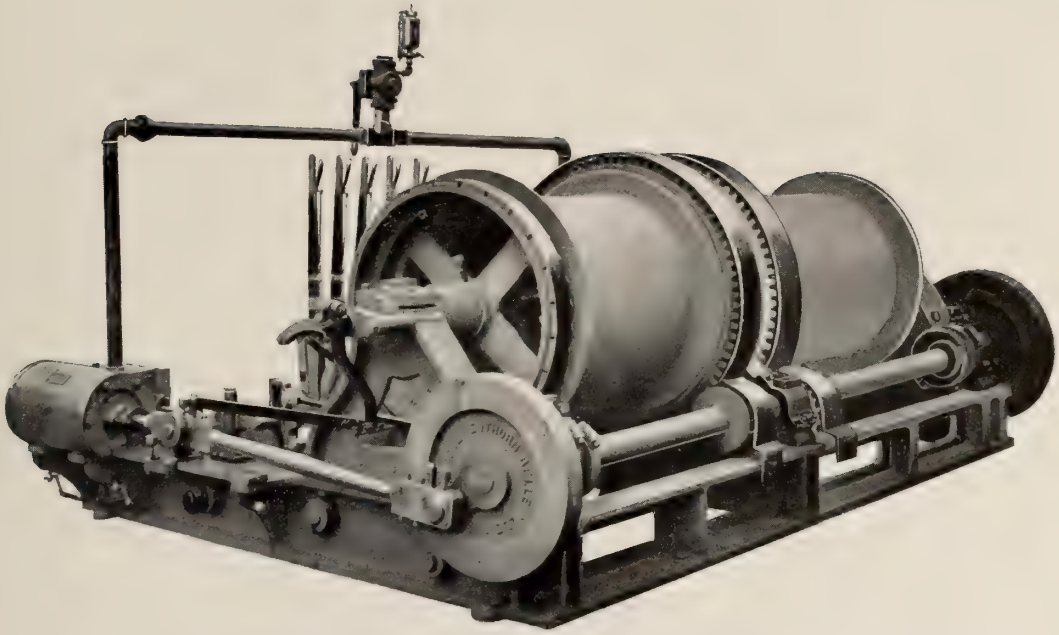
Diameter of Drum in inches	Depth of Flange	Load lifted on a single line Pounds	Speed of lift per min. in feet	Estimated Shipping Weight	Code Word Reversing Engine	Code Word Non-reversing Engine
24	3	3400	285	8300	Extrados	Eryngo
30	3	2950	330	9400	Exploit	Erythema
36	3	2450	395	10200	Eruca	Erythrin
40	2	2200	440	10500	Ervum	Exuviate

32 Horse Power, Double 8 x 12 Cylinders

High Speed Mining Hoist, Drums Side by Side.

Diameter of Drum in inches	Depth of Flange	Load lifted on a single line Pounds	Speed of lift per min. in feet	Estimated Shipping Weight	Code Word Reversing Engine	Code Word Non-reversing Engine
24	4½	4800	245	10500	Escambid	Eschalot
30	2	3900	300	11000	Expound	Eschar
36	2½	3200	365	12000	Escharp	Eschele
40	2	2900	400	12500	Exquisite	Esclavage

Every Hoisting Engine of our manufacture is thoroughly tested with steam for several hours before it leaves our factory, and we guarantee every machine to be sound in construction and perfect in operation for the work for which it is intended.



HIGH SPEED MINING HOIST.

Drums Side by Side.

For operating double compartment mines.
Lists of sizes and specifications on this and the opposite pages.

40 Horse Power, Double 9 x 12 Cylinders

High Speed Mining Hoist, Drums Side by Side.

Diameter of Drum in inches	Depth of Flange	Load lifted on a single line Pounds	Speed of lift per min. in feet	Estimated Shipping Weight	Code Word Reversing Engine	Code Word Non-reversing Engine
24	7	6000	240	15000	Escopette	Escript
30	6½	4850	300	15600	Extraction	Escritoire
36	3½	4000	360	16100	Escorial	Escrod
40	2	3650	400	16800	Extramural	Escuage
48	5	3000	475	19000	Escot	Escudo

50 Horse Power, Double 10 x 12 Cylinders

High Speed Mining Hoist, Drums Side by Side.

Diameter of Drum in inches	Depth of Flange	Load lifted on a single line Pounds	Speed of lift per min. in feet	Estimated Shipping Weight	Code Word Reversing Engine	Code Word Non-reversing Engine
24	7	7400	240	16300	Esculent	Eskar
30	6½	5900	300	16800	Escutcheon	Esopian
36	3½	5000	360	17400	Esdras	Esoteric
40	2	4500	400	18000	Eserine	Esox
48	5	3800	475	20000	Eshlar	Espadon

SPECIAL TYPES OF HOISTING ENGINE.

We manufacture Hoisting Engines, and also Electric and Belt Driven Hoists, for all purposes, and shall be pleased to furnish estimates for special or unusual machines promptly, if provided with necessary data as to requirements.

In the foregoing pages we have endeavored to illustrate in a general way the various types of Hoisting Engines we manufacture, but have not, of course, attempted to show all the many variations from these types, as these variations are almost without number. Although we prefer to build standard machines, and can give prompter delivery of these than of specials, we are willing to vary these standards at any time to suit the customer, or to design machines to suit particular requirements. We have designed many special Hoists for unusual services, and always with satisfaction to the customer.

In the following pages we show some of these machines whose design differs from the standards in the preceding pages. Our experience and our advice are at the service of any customer who has a difficult task and needs an unusual machine to do the work. A letter setting forth the conditions will be promptly answered, and, if necessary, a man will be sent to investigate the problem and devise a remedy.

TWO DERRICK HOISTING ENGINE.

The machine illustrated on the opposite page has been designed by us for the economical operating of two derricks with the one Hoisting Engine. The two small drums next the boiler work the two booms, while the two large drums handle the loads.

Our Standard Boom Swinger, as illustrated on pages 12 and 13, can be used in connection with this Hoist for swinging one derrick, but the other derrick, of course, would have to be swung by hand.

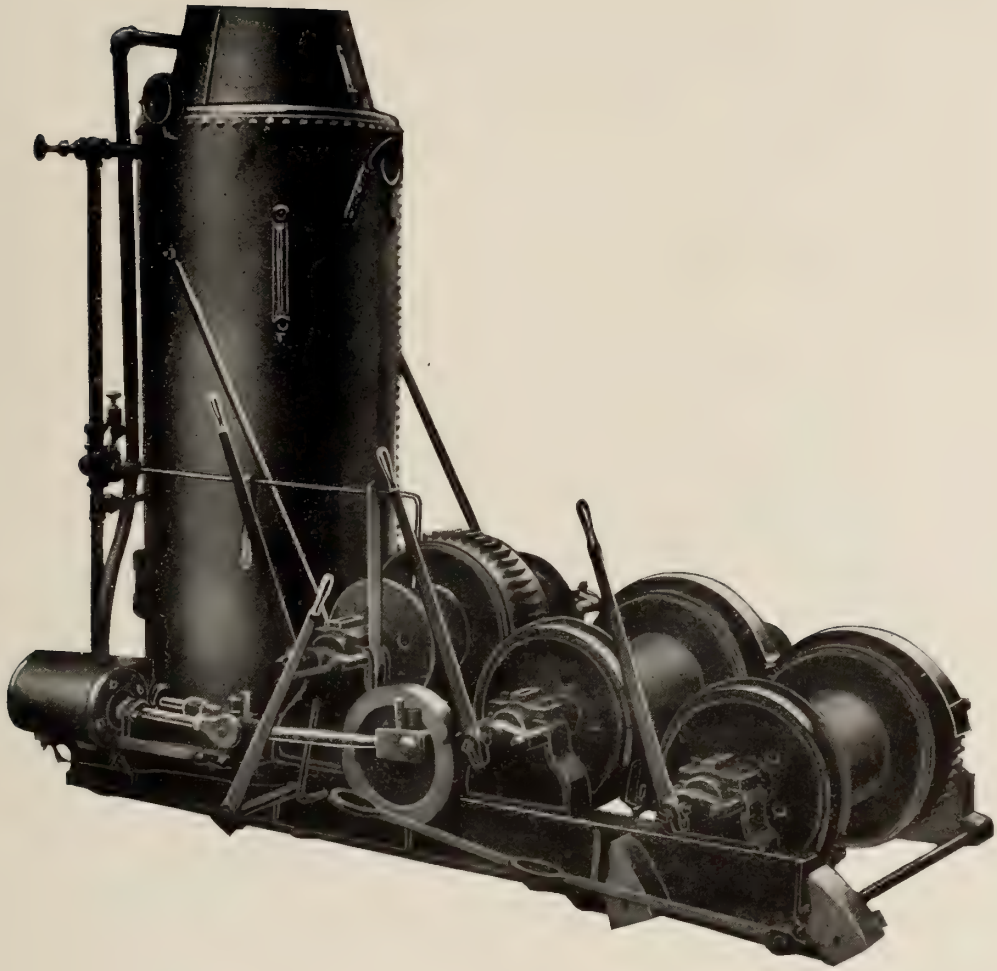
When used for operating only one derrick, the two small drums next the boiler can be used for swinging the boom, if so desired, but we always recommend our standard Boom Swinger in preference, for this work.

The Boilers used on these Hoists are our standard sized Boilers, same as described on pages 8 to 21, for the same sizes of engines.

H. P. usually Rated	Cylinders		Main Drums		Small Drums		Bed Plate		Weight Hoisted with single line	Hoisting Speed per Minute	Estimated Shipping Weight without Boiler	Estimated Shipping Weight with Boiler	Non-Reversing Engines	
	Bore, inches	Stroke, inches	Diameter inches	Length, inches	Diameter inches	Length, inches	Width, inches	Length, inches	LBS.	FEET	LBS.	LBS.	Code Word with Boiler	Code Word without Boiler
15	6½	8	12	20	12	11	47	108	4000	160	5700	7900	Highborn	Esparto
20	6¾	10	12	22	12	11	49	117	5500	150	6500	9200	Highbred	Esparver
25	7	12	12	24	12	11	53	131	7000	140	7200	10400	Highroad	Espeir
32	8	12	14	28	12	14	60	144	8000	140	10300	14000	Hightoned	Espibawn
40	9	12	16	30	14	14	63	153	10000	140	14300	18900	Highway	Espingole
50	10	12	16	30	14	14	64	153	12000	140	15400	21500	Highland	Espionage

Code Words for Reversing Engines.

Size of Engines	5 x 7	6½ x 8	6¾ x 10	7 x 12	8 x 12	9 x 12	10 x 12
Hoist with Boiler	Hangar	Hangdog	Hangman	Hanif	Hanksite	Hankus	Hansa
Hoist without Boiler	Esplees	Espousal	Esprit	Espringal	Esquimau	Esquisse	Essayist



TWO DERRICK HOISTING ENGINE.

For operating two Derricks with one Engine.

Sizes and specifications on opposite page.

We have built many special hoisting engines in addition to these herein illustrated. Our patterns include a great variety of types, combinations and sizes, enabling us to produce hoisting machinery perfectly adapted to the service required.

DOUBLE SPEED HAULAGE ENGINE.

With or without Boiler, as required.

On the opposite page we show an illustration of a Double Geared High Speed Haulage Engine. This machine was especially designed by us for hauling cars up a long incline which has two different grades, as for instance an incline where part of the rise is at the rate of one foot in each five, the balance rising at the rate of one foot in each twenty. In such a case the low speed is used for the steep part of the grade, and the high speed for the rest of the haul.

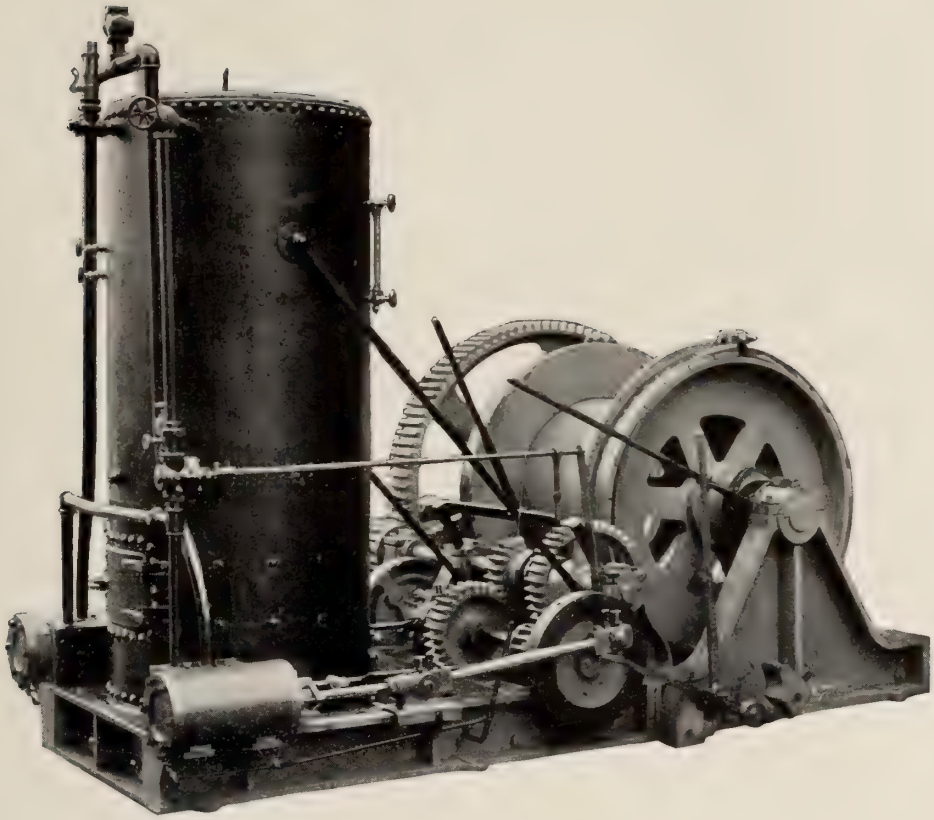
WE CAN SUPPLY YOU WITH A MACHINE OF THIS NATURE WITH ANY VARIATION OF SPEED OR TO HAUL ANY LOAD UP ANY GRADE.

If you have any use for a machine of this kind, simply tell us the amount of the load you wish to handle, the speed at which you want to haul it, together with the amount of the gradient, and we shall be pleased to submit specifications of a machine that will suit your requirements.

This machine can also be used to advantage in all sorts of general hoisting and derrick work. If it is desired to handle a light load the High Speed Gear can be used, or a load four or five times as heavy can be handled by using the Low Speed. The advantage of thus being able to change instantly from a high speed to a low speed will be readily appreciated, owing to the great saving in time over the ordinary method of changing from high to low speed by altering the blocks and tackle of the derrick. With this machine the change is instantly made by a single motion of a lever.

H. P. usually Rated	Cylinders		Drums		Gearing		Weight Hoisted with Single Line		Estim'd Shipping Weight with Boiler	Estim'd Shipping Weight without Boiler	Code Word for Machine with Boiler	Code Word for Machine without Boiler
	Bore, inches	Stroke, inches	Diameter inches	Length, inches	Fast Gear	Slow Gear	Fast Gear LBS.	Slow Gear LBS.	LBS.	LBS.		
15	6½	8	24	24	1 to 5	1 to 25	2000	10000	8500	6300	Hedge	Exercise
			30	30	1 to 5	1 to 25	1700	8500	9000	6800	Hedgehog	Exempt
20	6¾	10	24	24	1 to 5	1 to 25	2700	13500	9500	6800	Hydrology	Exuberance
			30	30	1 to 5	1 to 25	2300	11500	10000	7300	Hedgerow	Expunge
25	7	12	24	24	1 to 5	1 to 25	3400	17000	10500	7300	Heft	Expurgate
			30	30	1 to 5	1 to 25	3000	15000	11000	7800	Hydromel	Extant
32	8	12	30	30	1 to 5	1 to 25	3900	19500	13000	9700	Heifer	Extensor
			36	30	1 to 5	1 to 25	3600	18000	14000	10300	Helical	Exterior
40	9	12	30	30	1 to 5	1 to 25	4800	24000	18000	13400	Heliograph	External
			36	30	1 to 5	1 to 25	4000	20000	16000	15600	Helix	Extorsion
50	10	12	30	30	1 to 5	1 to 25	5900	29000	20700	14500	Heliosis	Essence
			36	30	1 to 5	1 to 25	5000	25000	22700	16500	Heliostat	Essoin

The Boilers for above Hoists are all the same size as for the corresponding sizes of Engines on pages 8 to 21.



DOUBLE SPEED HAULAGE ENGINE.

With or Without Boiler.

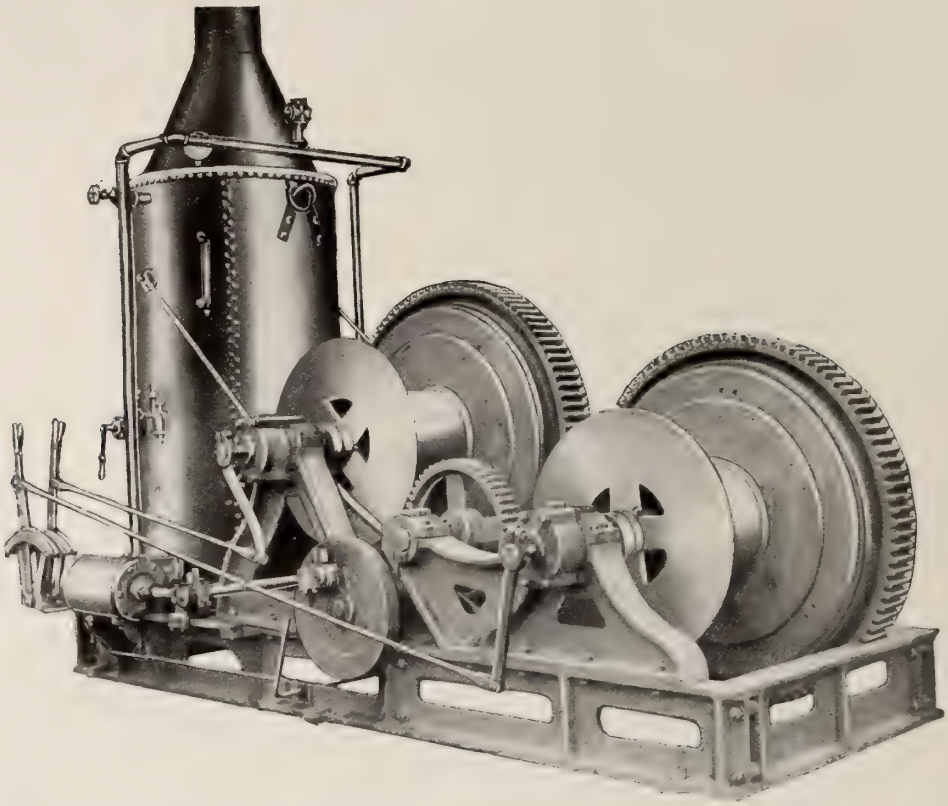
Instantly changed from one ton to five tons pull, etc., on a single line.

Full list of sizes and specifications on opposite page.

While this style of machine is designed primarily for hauling, it can be used also to good advantage on derrick work.

A movement of a lever causes the drum to revolve slowly with great power, and a reverse movement of the lever causes the drum to revolve quickly for lighter work. In derrick work it is usual to multiply the tackle to enable the engine to hoist the heaviest loads, causing not only a waste of blocks and rope, but a loss of time consumed in lifting light loads or in winding slack rope at a slow speed. Changing the number of lines in the block is objectionable. This engine overcomes these troubles, the change from heavy to light work being instantly made by the engineer.

Our extended and varied experience in designing and building standard and special Haulage engines places us in a position to assure the customer that the power available will be utilized in the most economical and efficient manner, and that he will get the best possible value for his money.



SPECIAL COMPOUND GEARED HAULAGE ENGINE.

For hauling extra heavy loads at slow speed.

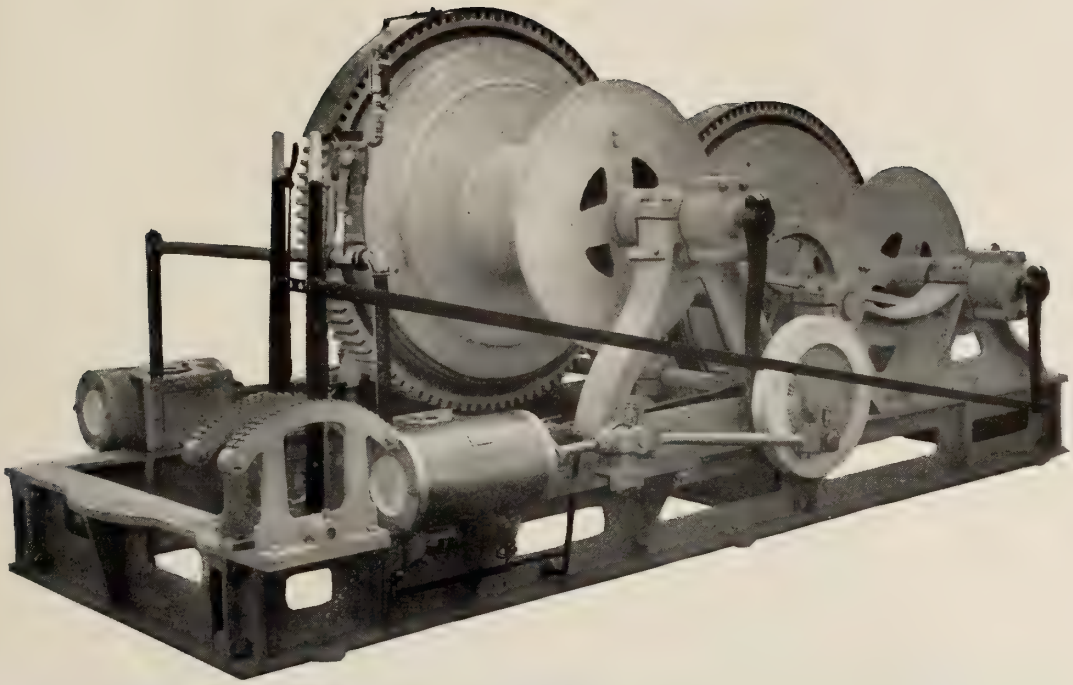
The above Hoisting Engine has been designed by us for exceptionally heavy service, where speed is not desired, such as moving heavy coal towers up and down a dock, handling loaded cars up and down steep inclines, etc.

These Engines are built exceptionally strong and heavy in every part, and are guaranteed to be capable of hoisting on a direct lift the loads listed in the specifications below. On page 44 will be found a table, by the use of which one can readily ascertain the load which these engines will haul up any grade.

The Boilers for these Engines are all the standard size boilers, as used on the standard engines shown on pages 8 to 21.

Specifications of the Above Engine.

H. P. usually Rated	Cylinders		Drums			Bed Plate		Weight Hoisted with single line on straight Lift lbs.	Hoisting speed per min. in feet	Estimated Shipping Weight with Boiler	Code Words	
	Bore inches	Stroke inches	Diameter inches	Length inches	Depth of Flange	Width inches	Length inches				Non-reversing Engine with Boiler	Reversing Engine with Boiler
25	7	12	20	24	10	58	128	16500	60	12000	Herakla	Hulk
32	8	12	20	24	10	62	169	21500	55	16000	Herbad	Hercogamy
40	9	12	20	24	10	62	172	27700	53	21000	Herbalist	Hercules
50	10	12	20	24	10	62	172	34000	53	24000	Hydrophyte	Hercynite



SPECIAL COMPOUND GEARED HAULAGE ENGINE.

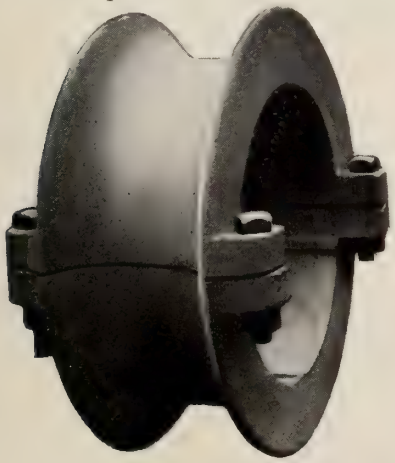
Without Boiler.

This machine is the same as the Hoist shown on the opposite page, but without boiler. Note the strength and massiveness of the design, also the centre bearing on the crank shaft, for extra stability.

TAILROPE HAULAGE, or BUILDERS' SHEAVE ATTACHMENT.

The Special form of Sheave shown herewith has been designed by us for attaching to the drum of any of our Standard Hoisting Engines, for use in "tailrope haulage" or for operating a platform elevator in building operations.

The purchase of one of these special sheaves will sometimes relieve the owner from the necessity of purchasing a special Hoist for one particular job.

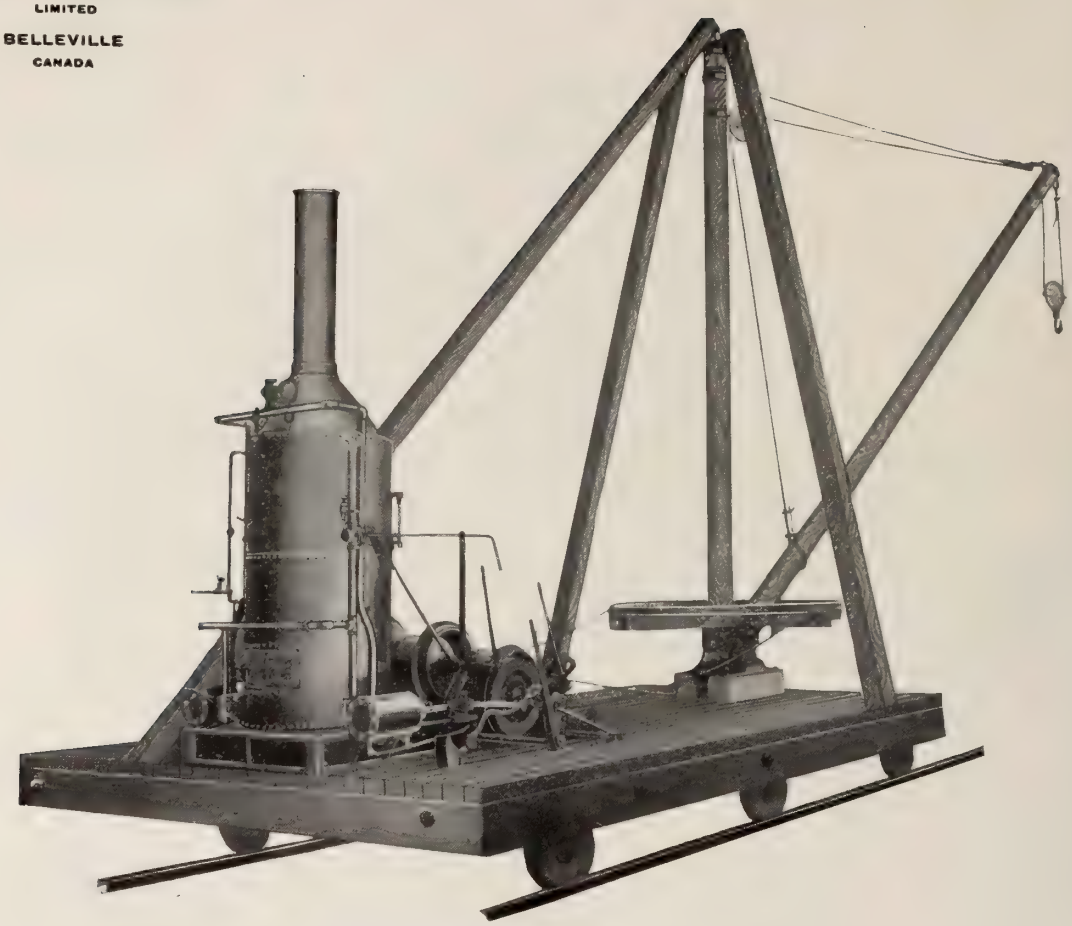


A sheave of this sort will be found to be a time-saver and a money saver to its owner. It can be clamped to the drum in a few minutes, and taken off again just as quickly.

We can supply this sheave to fit drums of 9″, 12″, 14″, and 16″ in diameter.

Telegraphic Code Word for this Sheave is:

9″ size—Hennery.	14″ size—Henpeck.
12″ size—Hencoop.	16″ size—Henroost.



TRAVELLING DERRICK.

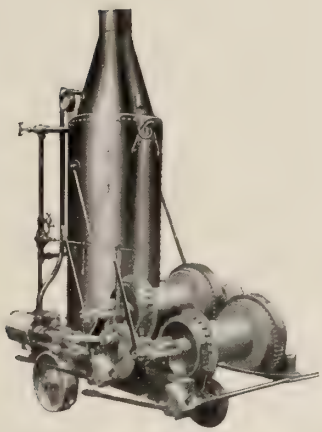
Reversible—Self-Propelling.

The above illustration shows the adaptability of our standard Hoisting Engines for mounting on a car for use in ditching, excavating, and many other purposes. We furnish the whole equipment, as shown above, but to order only, and made to special specifications to suit the particular work for which the machine is intended. Hence we do not tabulate any sizes or specifications in this catalogue on this outfit.

Usually, however, the contractor finds it cheaper to build his own car and derrick from local timbers, thus saving considerable in freight charges. We have supplied many of our Hoisting Engines for mounting on cars in this way. When the contractor supplies the woodwork we supply all the iron work, ready for assembling, which consists of One Standard Reversible Double Drum Hoisting Engine, with car propelling gear to connect to axle of car; one set of car trucks, the wheels of which have either single or double flange, as required, and either single or double axle boxes, as the customer prefers, and one set of derrick irons, with bull wheel for swinging the boom. If the car is large enough for it some contractors also include a Boom Swinger in the outfit.

In the above illustration the Hoisting Engine is reversible, so the car can be moved in either direction. One main drum hoists the load, and the other drum swings the boom. Raising and lowering of the boom is done by hand.

We are prepared to design, or assist a customer in designing an outfit for a travelling derrick for any purpose within the limits of this style of machine, and will be glad to correspond with intending purchasers, or to take the matter up with them in person.



The above illustration shows how our standard Hoisting Engines can be mounted on trucks and moved around easily about the work. This is especially convenient for dock work.

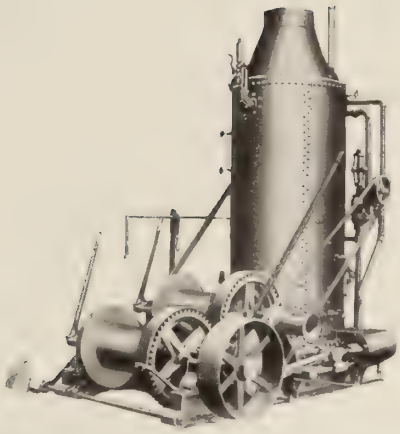
The Truck, as will be seen, is made up of three wheels only, the front wheel being mounted on a swivel connection, with a tee handle for guiding the hoist in its journeyings. These wheels are of massive construction, sufficiently strong for the heavy duty they have to perform, and they have a broad flat tread so they will not injure the dock.

These Trucks can be fitted to any of our standard Hoists at a moderate cost.

QUADRANTS AND LEVERS.

The accompanying illustration shows our standard Levers and Quadrants with the lower end of the levers extended to carry the operating Rods below the deck of a boat or the floor of a car. We can supply these levers and quadrants either singly or in groups of as many levers as may be required.

We can also furnish groups or batteries of our Standard Levers and Quadrants as used on our Hoisting Engines and illustrated in the preceding pages, and will be glad to give prices on request.



The above illustration shows how a pulley can be attached to any of our Hoisting Engines and power taken off for any other purpose required. For this purpose the forward drum shaft is extended to receive the pulley, and a governor is fitted to the steam pipes, the pulley of which is driven off the crank of the engine.

Power is frequently required for operating a pump, a saw, or some other piece of machinery, and this is a simple and economical means of obtaining this power.

ELECTRIC DRIVEN HOISTS.

Electric Motors are fast displacing small steam engines on account of the convenience of their installation and their economy in operation. This saving is nowhere more apparent than in intermittent hoisting work.

We are not manufacturers of Electric Motors, hence we do not illustrate any Motors in this catalogue, nor do we ourselves guarantee any motors that we buy from motor manufacturers and supply with our Hoists. When we furnish an electric motor to drive one of our electric Hoists we buy the motor from a reputable and responsible maker, and the motor itself is guaranteed by that maker, not by ourselves.

We manufacture Hoists for Electric Drive, with one, two, three, or four drums, in any combination as may be required by the customer, and with drums of any diameter up to forty-eight inches. These Electric Driven Hoists are supplied with the necessary intermediate gears, arranged to suit the speed of the motor, and are all ready to receive the motor.

The motor itself can be ordered direct from us, or the customer can order it himself from the motor manufacturer or agent, as he prefers. It is preferable, we believe, for the customer to deal with the motor people, as he is more familiar with the local electrical conditions than we could possibly be.

It will be noticed from the illustrations that the motor can be attached to the Hoist in two positions. The better way, we believe, is to mount the motor on the extension of the bed of the Hoist, in which case it is practically one piece of the Hoist, and as stable and rigid as is possible to make it. The other way is to set the motor on the floor beside the Hoist. This is also a satisfactory connection if due care is exercised to mesh the gears properly and to keep the floor bolts tight.

In ordering a motor from us, which we are to mount on the Hoist before making shipment, the following facts should be made clear to us to ensure that the motor will be suited to the local conditions on its arrival.

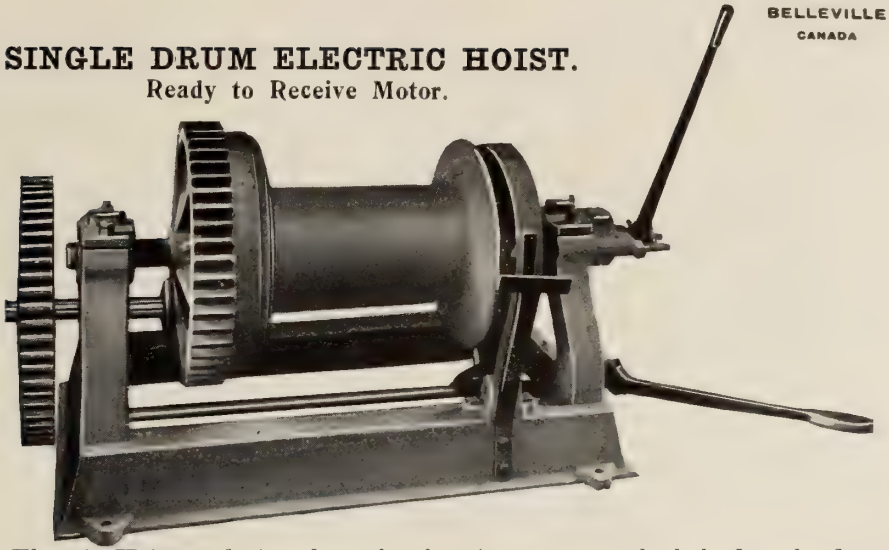
Whether current is direct or alternating.
If current is direct, state the voltage.
If current is alternating, state number of alternations and phase.
Load to be lifted on a single line.
Hoisting speed required.
The height of lift or length of haul.
The frequency of the hoisting, or number of round trips per hour.
The interval of rest between hoistings.
If the motor will run out of doors or inside.
If the intermediate, fast running gears should be enclosed to protect them from dust or grit.
Also whether reversing motor is required, or if motor will be run in one direction only.

The success of an electric drive depends to a great extent on the effectiveness of the intermediate gearing. The motor pinion and the gear into which it meshes should be machine cut gears to get the best results, and in extra heavy services these gears are better made of steel than of cast iron.

Owing to the fact that we do not supply the motor it is, of course, impossible for us to quote on the intermediate gear into which the motor pinion meshes, except in special cases where we have full information regarding the type of motor and size of pinion that will be needed. Unless otherwise especially mentioned, therefore, our quotations on electric hoists do not include this intermediate gear, but do include the countershaft, bearings and hoist pinion.

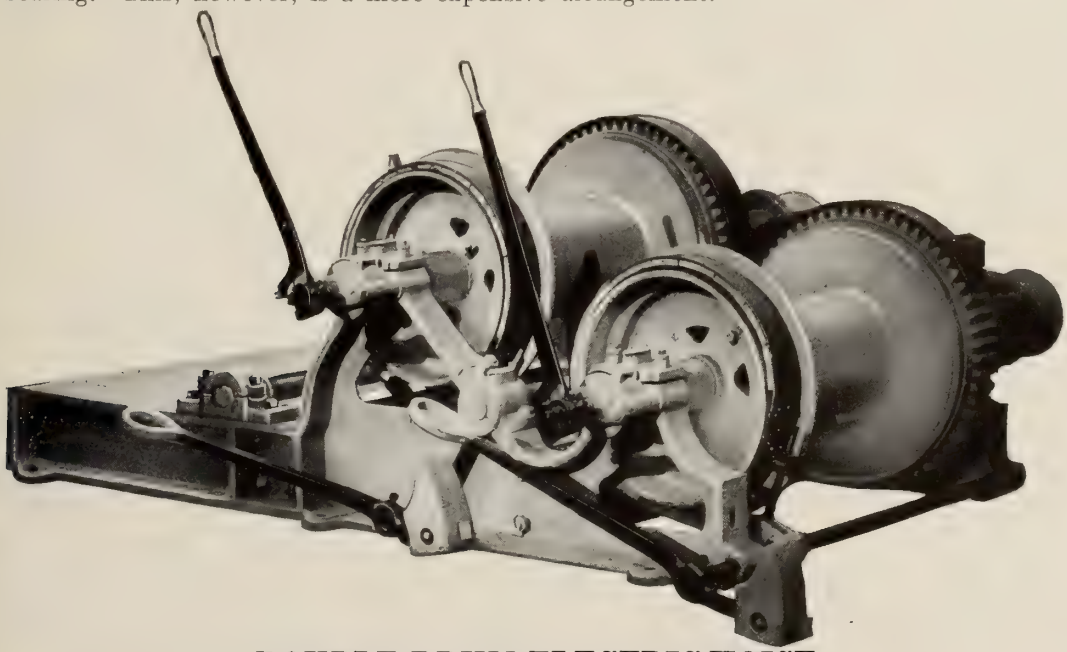
SINGLE DRUM ELECTRIC HOIST.

Ready to Receive Motor.



The above Electric Hoist is designed so the electric motor may be bolted to the floor beside the hoist. As the hoist is also bolted to the same floor this makes a rigid and reliable combination. Full specifications of this Hoist, with all sizes of drums, will be found on the next page.

In cases where it is considered preferable to mount the motor on the same base with the Hoist, we cast an extension on the bed plate of the Hoist to receive the motor, in which case the intermediate gear is fitted on the pinion shaft between the pinion and the bearing. This, however, is a more expensive arrangement.



DOUBLE DRUM ELECTRIC HOIST.

With Countershafting, Ready to Receive the Motor and Intermediate Gear.

The above is our standard design of Double Drum Electric Hoist, with base made ready to receive the motor. Full specifications of this machine, with all sizes of drums, are listed on the next page.

ELECTRIC HOIST SPECIFICATIONS.

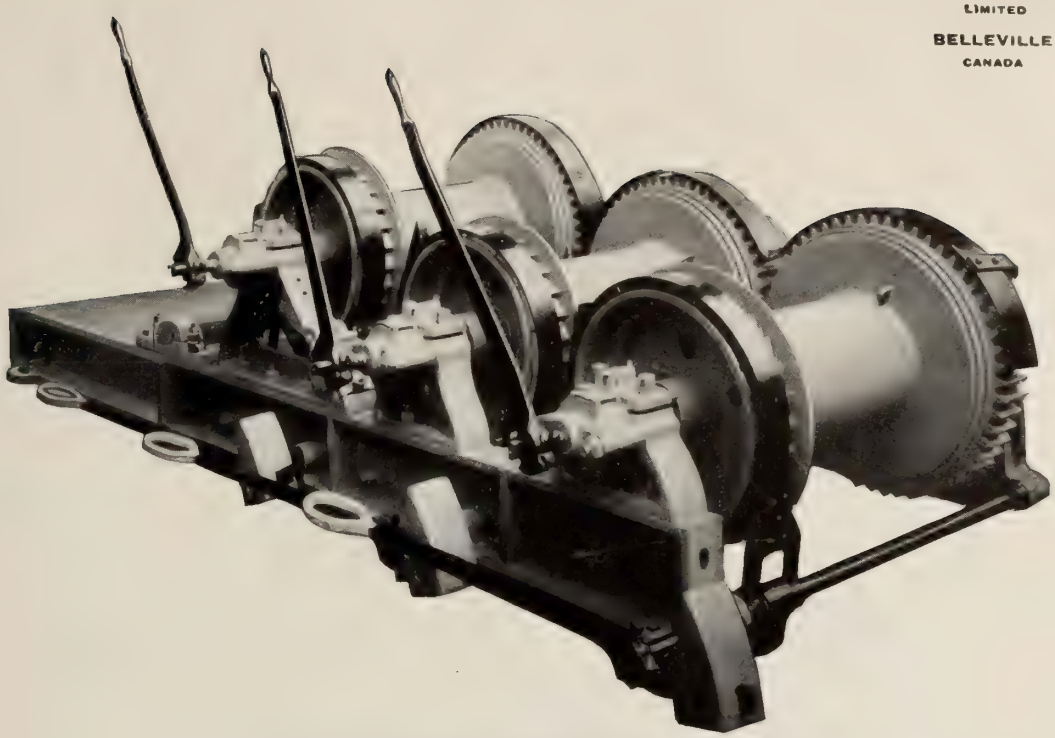
Giving Weights Lifted and Hoisting Speeds for All Diameters of Drums up to Three Feet, and for Hoists with One, Two, Three or Four Drums.

The approximate weights and telegraphic code words in this list are for machines as shown in the accompanying illustrations of Electric Hoists, and in no case include the Motor or the Intermediate Gear into which the Motor Pinion meshes.

We are prepared to supply different arrangements of drums and motor drive to those illustrated, and will be pleased to make up special specifications and quotations at any time, on request.

Actual Horse Power to be Given by Belt to Hoist	Revolutions per Minute of Hoist Pinion Shaft		9 In. Diameter Drums.		12 In. Diameter Drums				14 In. Diameter Drums		16 In. Diameter Drums		20 In. Diameter Drums		24 In. Diameter Drums	
			One Drum	Two Drums	One Drum	Two Drums	Three Drums	Four Drums	One Drum	Two Drums	One Drum	Two Drums	One Drum	Two Drums	One Drum	Two Drums
13	300	Weight Lifted.....lbs.	2600	2600	2000	2000	2000	2000	1700	1700	1650	1650	1300	1300	1100	1100
		Speed per Minute.....feet	160	160	210	210	210	210	240	240	250	250	315	315	375	375
		Depth of Drum Flange...Ins.	4¼	4¼	2¾	2¾	2¾	2¾	1¾	1¾	4	4	2	2	3	3
		Estimated Shipping Wt...lbs.	770	1700	820	1800	2600	3300	870	1900	1000	2200	1100	2400	1270	2700
		Code Word.....	Midge	Millet	Macaw	Mace	Mince	Macron	Macula	Minim	Magnet	Mink	Magpie	Magyar	Mafia	Maize
20	240	Weight Lifted.....lbs.	....	....	4000	4000	4000	4000	3200	3200	2900	2900	2375	2375	2000	2000
		Speed per Minute.....feet	....	....	160	160	160	160	200	200	220	220	270	270	325	325
		Depth of Drum Flange...Ins.	....	....	5	5	5	5	4	4	3	3	3	3	3	3
		Estimated Shipping Wt...lbs.	....	....	1450	3200	4500	5800	1500	3400	1600	3600	1950	4200	2000	4400
		Code Word.....	....	....	Mint	Malady	Malaria	Mallard	Mallum	Maloo	Malva	Miser	Miter	Moat	Mocha	Mogul
		30 In. Diameter														
25	230	Weight Lifted.....lbs.	2300	2300	5500	5500	5500	5500	4500	4500	3900	3900	3200	3200	2700	2700
		Speed per Minute.....feet	360	360	150	150	150	150	185	185	210	210	260	260	310	310
		Depth of Drum Flange...Ins.	3½	3½	6	6	6	6	5	5	4	4	3	3	3	3
		Estimated Shipping Wt...lbs.	2600	5700	1550	3400	4800	6300	1600	3600	1700	3800	2000	4400	2100	4600
		Code Word.....	Marcite	Marian	Mandil	Mola	Manes	Mango	Mirth	Manito	Manuss	Manx	Manura	Maori	Maqui	Moose
30	210	Weight Lifted.....lbs.	3000	3000	7000	7000	7000	7000	5700	5700	5100	5100	4000	4000	3400	3400
		Speed per Minute.....feet	330	330	140	140	140	140	170	170	190	190	240	240	285	285
		Depth of Drum Flange...Ins.	3	3	7	7	7	7	6	6	5	5	3	3	3	3
		Estimated Shipping Wt...lbs.	2800	6000	1650	3750	5300	6900	1750	4000	1850	4100	2100	4600	2200	4900
		Code Word.....	Moor	Masora	Mull	Mossy	Mess	Mosaic	Moral	Mars	Mamk	Martite	Marut	Musaro	Mascot	Masher
		36 In. Diameter														
36	200	Weight Lifted.....lbs.	3900	3900	3200	3200	....	....	8000	8000	7100	7100	5700	5700	4800	4800
		Speed per Minute.....feet	300	300	365	365	....	....	140	140	165	165	205	205	245	245
		Depth of Drum Flange...Ins.	2	2	2½	2½	....	....	9½	9½	8½	8½	6½	6½	4½	4½
		Estimated Shipping Wt...lbs.	3100	6800	3300	7200	....	....	2300	5200	2500	5600	2700	6000	2800	6200
		Code Word.....	Matsu	Milk	Music	Myrrh	....	....	Moth	Massif	Mataco	Motto	Matice	Matin	Matrix	Matron
45	190	Weight Lifted.....lbs.	4900	4900	4000	4000	....	....	....	....	10000	10000	7300	7300	6000	6000
		Speed per Minute.....feet	300	300	360	360	....	....	....	....	140	140	200	200	240	240
		Depth of Drum Flange...Ins.	6½	6½	3½	3½	....	....	....	....	11	11	9	9	7	7
		Estimated Shipping Wt...lbs.	3500	7900	3700	8300	....	....	....	....	3000	6900	3200	7300	3300	7500
		Code Word.....	Mead	Meatus	Merae	Melon	....	....	....	....	Mavis	Maxilla	Maya	Mezza	Malope	Mande
55	190	Weight Lifted.....lbs.	5900	5900	5000	5000	....	....	....	....	12500	12500	8900	8900	7400	7400
		Speed per Minute.....feet	300	300	360	360	....	....	....	....	140	140	200	200	240	240
		Depth of Drum Flange...Ins.	6½	6½	3½	3½	....	....	....	....	11	11	9	9	7	7
		Estimated Shipping Wt...lbs	3600	8100	3800	8500	....	....	....	....	3100	7100	3300	7500	3400	7700
		Code Word.....	Megrim	Mural	Melain	Merino	....	....	....	....	Median	Medio	Mute	Medusa	Meersa	Mush

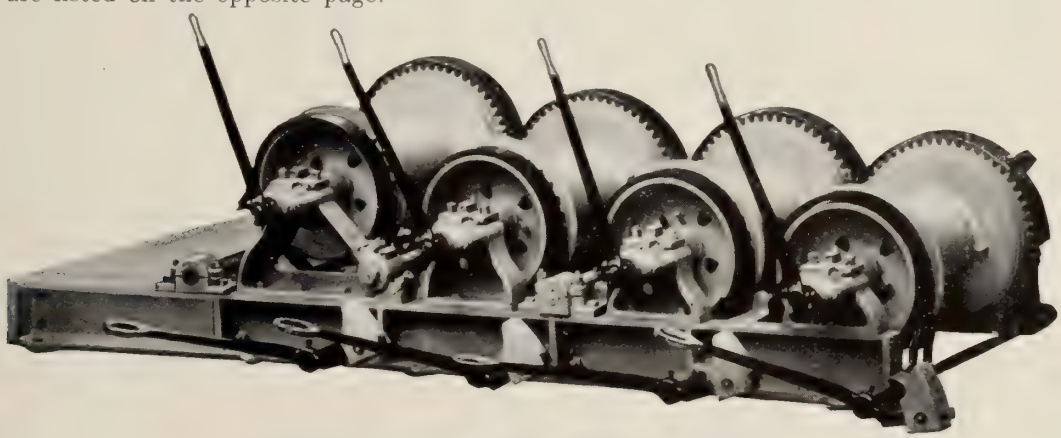
Any variations in either the driving power applied to the above Hoists, or the speed of the pulley, will thereby either increase or diminish the lifting capacity of the Hoist.



THREE DRUM ELECTRIC HOIST.

With Countershafting, Ready to Receive the Motor and Intermediate Gearing.

The above is our standard design of Three Drum Electric Hoist, with base made ready to receive the motor. Full specifications of this machine, for all sizes of motors are listed on the opposite page.

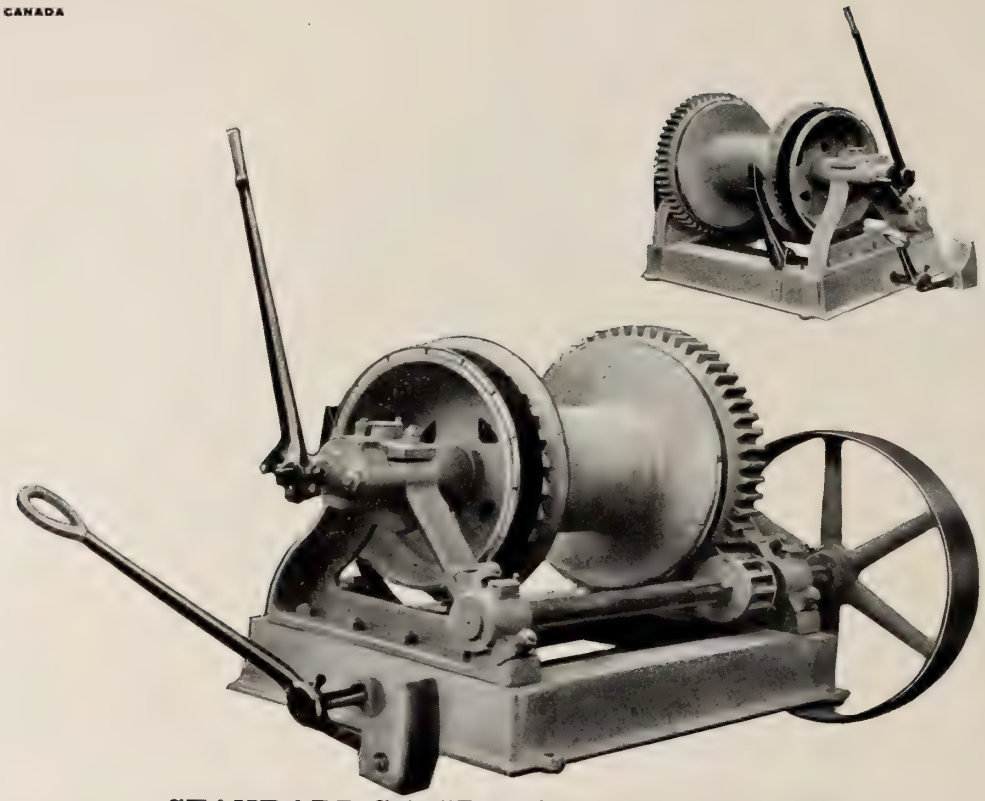


FOUR DRUM ELECTRIC HOIST.

With Countershafting, Ready to Receive the Motor and Intermediate Gearing.

Full specifications of the above Four Drum Electric Hoist, for all sizes of motors, are listed on the page opposite this.

In cases where either of the above machines would be too long in the base for the place where it must be operated, the motor extension can be omitted and the motor bolted to the floor beside the Hoist, as shown in the single drum electric Hoist on page 73.



STANDARD SINGLE DRUM BELT HOIST.

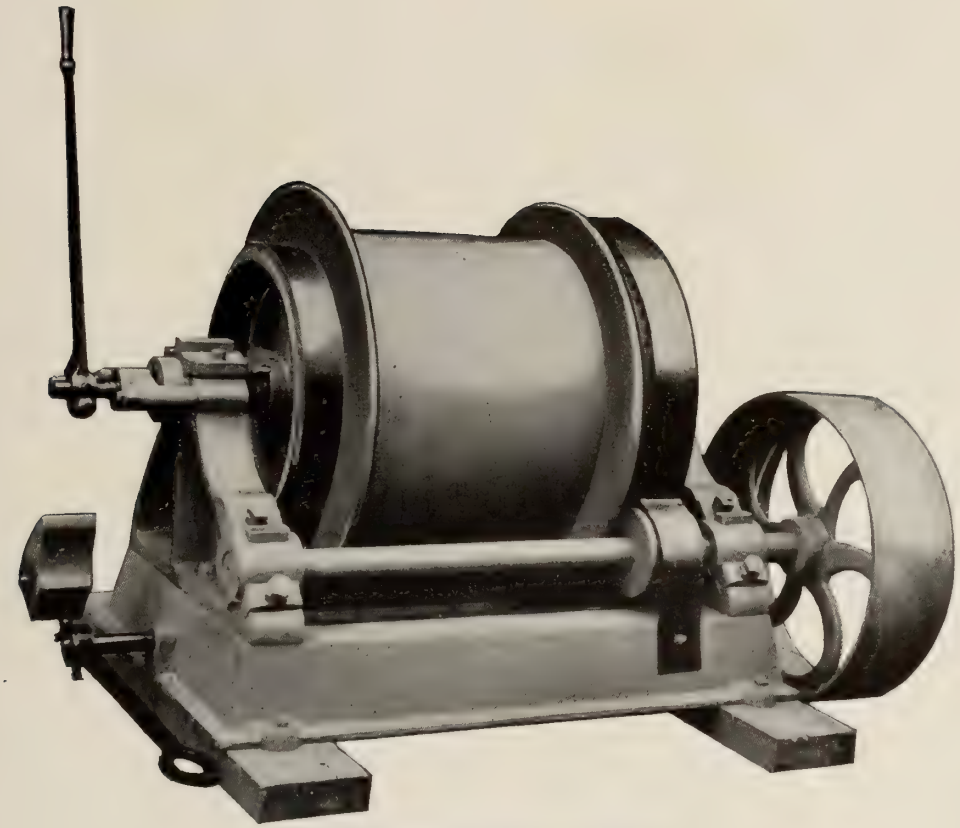
With the rapidly developing use of electric, gasoline and water powers in place of steam, there has also arisen an extensive demand for Belt Driven Hoists. We have met this demand by designing an assortment of these Hoists to meet almost every conceivable requirement in this line. We are also ready at all times to prepare and build further designs in case those shown and listed in these pages will not meet the needs of the customer.

On page 76 we give a tabulated list of a large number of these Hoists varying from ten to fifty horse power, and with all diameters of drums.

The Hoist illustrated above and listed below is our standard size and design of Single Drum Belt Hoist, which we carry in stock, and on which we can give reasonably prompt delivery.

As shown on page 80, this Hoist can be supplied, if desired, without the cast iron base, in which case the customer mounts it on the beams or floor of the building where it is to be used. The Hoist will work effectively when properly mounted in this way, and at a saving in the original cost of the Hoist.

Actual Horse Power to be Given by Belt to Hoist	Drum		Revolutions of Pulley	Bed Plate		Weight Hoisted with single line	Hoisting Speed per Minute,	Estimated Shipping Weight with Iron Base,	Code Word with Iron Base	Code Word without Base
	Diameter inches	Length, inches		Width, inches	Length, inches	LBS.	FEET	LBS.		
13	9	15	300	38	27	2600	160	770	Babism	Bacaba
20	12	22	240	50	34	4000	160	1500	Babble	Bacon
25	12	22	230	50	34	5500	150	1600	Babe	Badge
30	12	22	210	50	34	7000	140	1700	Bevy	Baffle
36	14	22	200	50	34	8000	140	2300	Baboon	Bait
45	16	22	190	50	34	10000	140	3000	Beaker	Bald
55	16	22	190	50	34	12500	140	3100	Bluch	Bacca



HIGH SPEED BELT HOIST.

While we list on the next page our High Speed Hoists with all diameters of drums, we find there are certain sizes that are favored by buyers more than others. We accordingly list these sizes below for the convenience of the intending purchaser, but can usually give equally as good delivery on any of the other sizes of drums.

The lists given on this and the page opposite are duplicated in the larger list on the next page, and the same remarks regarding sizes of pulleys and variations in speed and capacities apply to these smaller lists as to the machines in the larger list.

Actual Horse Power to be Given by Belt to Hoist	Drum		Revolutions of Pulley	Bed Plate		Weight Hoisted with single line, LBS.	Hoisting Speed per Minute, FEET	Estimated Shipping Weight with Iron Base, LBS.	Code Word with Iron Base	Code Word, without Base
	Diameter inches	Length inches		Width, inches	Length, inches					
13	16	15	300	38	27	1650	250	1300	Beck	Bacino
20	20	15	240	50	34	2375	270	2000	Bath	Beast
25	24	22	230	50	34	2700	310	2200	Baton	Beau
30	24	22	210	50	34	3400	285	2300	Battle	Beauty
36	30	22	200	50	34	3900	300	3000	Bay	Beaver
45	30	22	190	50	34	4900	300	3500	Blonde	Beetle
55	30	22	190	50	34	5900	300	3600	Bacilus	Bacinet

When ordering goods by wire use the code words in the specification tables, also the correspondence code at the back of this book. It will save you money.

BELT HOIST SPECIFICATIONS.

Giving Weights Lifted and Hoisting Speeds for All Diameters of Drums up to Three Feet, and for Hoists with One, Two, Three or Four Drums.

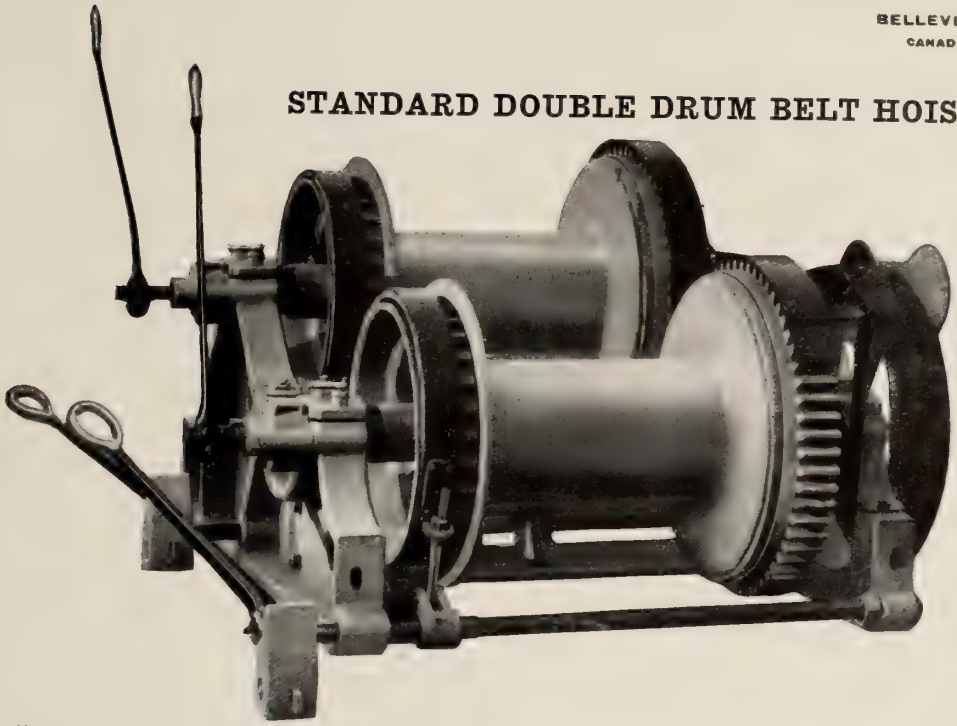
The approximate shipping weights and telegraphic code words in this list are for Belt Hoists with smooth drums and with cast iron base or bed plate, and in all cases include the supplying of a pulley of any required size up to thirty inches diameter by six inch face. Larger pulleys than this are in all cases charged as an extra. Tight and loose pulleys are also charged as an extra.

Grooved Drum Belt Hoists take a special list, which is given on page 80.

Actual Horse Power to be Given by Belt to Hoist	Revolutions per Minute of Hoist Pulley		9 In. Diameter Drums		12 in. Diameter Drums				14 In. Diameter Drums		16 In. Diameter Drums		20 In. Diameter Drums		24 In. Diameter Drums	
			One Drum	Two Drums	One Drum	Two Drums	Three Drums	Four Drums	One Drum	Two Drums	One Drum	Two Drums	One Drum	Two Drums	One Drum	Two Drums
13	300	Weight Lifted ..... lbs.	2600	2600	2000	2000	2000	2000	1700	1700	1650	1650	1300	1300	1100	1100
		Speed per Minute ..... feet	160	160	210	210	210	210	240	240	250	250	315	315	375	375
		Depth of Drum Flange ... Ins.	4¼	4¼	2¾	2¾	2¾	2¾	1¾	1⅞	4	4	2	2	3	3
		Estimated Shipping Wt. .. lbs.	770	1450	825	1575	2300	3000	875	1700	1000	1950	1100	2150	1300	2500
		Code Word.	Babism	Baccar	Badger	Bacha	Bacile	Baize	Bacon	Bactris	Beckon	Badoch	Baeta	Bafia	Bagara	Bagnio
20	240	Weight Lifted ..... lbs.	....	....	4000	4000	4000	4000	3200	3200	2900	2900	2375	2375	2000	2000
		Speed per Minute ..... feet	....	....	160	160	160	160	200	200	220	220	270	270	325	325
		Depth of Drum Flange ... Ins.	..	....	5	5	5	5	4	4	3	3	3	3	3	3
		Estimated Shipping Wt. .. lbs.	...	....	1500	2800	4100	5400	1600	3000	1700	3200	2000	3800	2100	4000
		Code Word.	....	....	Babble	Badian	Baidak	Baillon	Bairam	Bairn	Balant	Balata	Bath	Balbus	Balder	Baldric
		30 In. Diameter														
25	230	Weight Lifted. ..... lbs.	2300	2300	5500	5500	5500	5500	4500	4500	3900	3900	3200	3200	2700	2700
		Speed per Minute ..... feet	360	360	150	150	150	150	185	185	210	210	260	260	310	310
		Depth of Drum Flange .. Ins.	3	3	6	6	6	6	5	5	4	4	3	3	3	3
		Estimated Shipping Wt. .. lbs.	2300	4400	1600	3000	4400	5800	1700	3200	1800	3400	2100	4000	2200	4200
		Code Word.	Banat	Banco	Babe	Baleen	Baler	Baliki	Balista	Balize	Balm	Banjo	Baltic	Baluchi	Baton	Bardic
30	210	Weight Lifted ..... lbs.	3000	3000	7000	7000	7000	7000	5700	5700	5100	5100	4000	4000	3400	3400
		Speed per Minute ..... feet	330	330	140	140	140	140	170	170	190	190	240	240	285	285
		Depth of Drum Flange ... Ins.	3	3	7	7	7	7	6	6	5	5	3	3	3	3
		Estimated Shipping Wt. .. lbs.	2800	5500	1700	3250	4800	6400	1800	3500	1900	3700	2100	4000	2300	4400
		Code Word.	Barbu	Bight	Bevy	Banda	Ballota	Balaam	Bias	Bandog	Bib	Baobab	Barad	Bier	Battle	Bigot
		36 in. Diameter														
36	200	Weight Lifted. ..... lbs.	3900	3900	3200	3200	....	....	8000	8000	7100	7100	5700	5700	4800	4800
		Speed per Minute ..... feet	300	300	365	365	....	....	140	140	165	165	205	205	245	245
		Depth of Drum Flange . Ins.	2	2	2½	2½	....	....	9½	9½	8½	8½	6½	6½	4½	4½
		Estimated Shipping Wt .. lbs.	3000	5900	3400	6700	....	....	2300	4600	2500	5000	2700	5300	2800	5500
		Code Word.	Bay	Bijou	Bilge	Baroco	....	....	Baboon	Barcan	Barfish	Barilla	Baris	Barite	Barium	Barley
45	190	Weight Lifted ..... lbs.	4900	4900	4000	4000	...	....	...	...	10000	10000	7300	7300	6000	6000
		Speed per Minute ..... feet	300	300	360	360	....	....	....	....	140	140	200	200	240	240
		Depth of Drum Flange .. Ins.	6½	6½	3½	3½	....	....	....	....	11	11	9	9	7	7
		Estimated Shipping Wt. .. lbs.	3500	6900	3700	7300	....	....	....	....	3000	6000	3200	6300	3300	6500
		Code Word.	Blond	Barwin	Bloom	Baryta	....	....	....	....	Beaker	Biped	Bison	Barris	Barsom	Barvel
55	190	Weight Lifted. ..... lbs.	5900	5900	5000	5000	....	....	....	....	12500	12500	8900	8900	7400	7400
		Speed per Minute ..... feet	300	300	360	360	....	....	....	....	140	140	200	200	240	240
		Depth of Drum Flange.... Ins.	6½	6½	3½	3½	....	....	....	....	11	11	9	9	7	7
		Estimated Shipping Wt. .. lbs.	3600	7100	3800	7500	....	....	....	....	3100	6200	3300	6500	3400	6700
		Code Word.	Bacilus	Basset	Basta	Basyl	....	....	....	....	Bluch	Boa	Bashaw	Basilic	Basinet	Basque

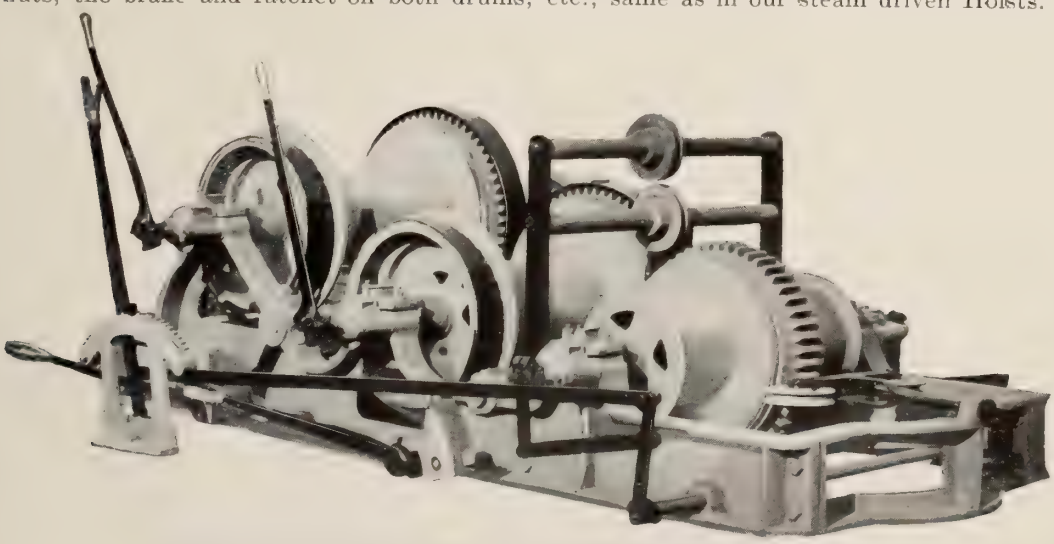
Any variations in either the driving power applied to the above Hoists, or the speed of the pulley, will thereby either increase or diminish the lifting capacity of the Hoist.

STANDARD DOUBLE DRUM BELT HOIST.



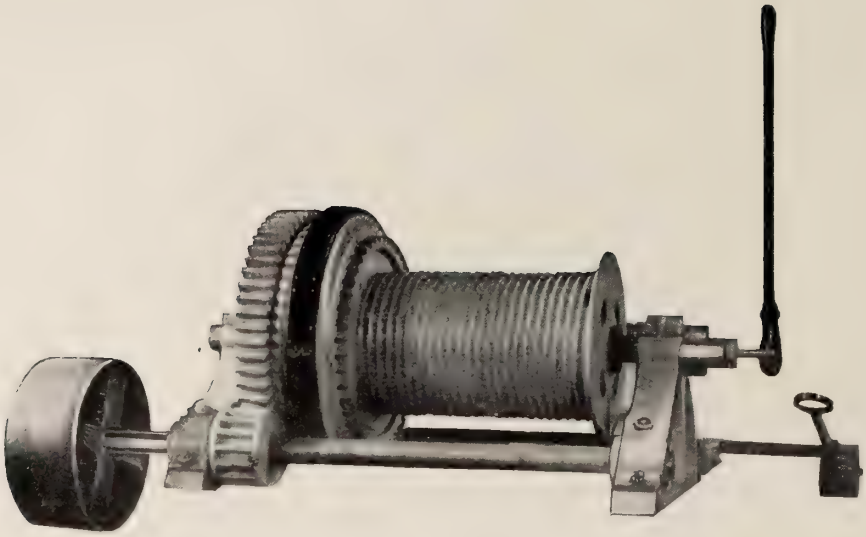
Full tabulated list of sizes and capacities of this Hoist with various diameters of drums will be found on the opposite page.

This is a strong, well built machine, one that can be relied on to do its work economically and well. Note the one-piece side frame and bearings, the self-oiling thrust nuts, the brake and ratchet on both drums, etc., same as in our steam driven Hoists.



DOUBLE DRUM BELT HOIST WITH SWINGER.

The above illustration shows the interchangeability of all of our standard designs of Hoists, and the ease with which our standard Swinger, designed for steam hoist work, can be attached to our belt driven hoists. This will frequently mean a considerable saving to the contractor, as he can use an old swinger with a new hoist, or vice versa.



SPECIAL GROOVED DRUM BELT HOIST.

As some contractors prefer a grooved drum instead of a plain drum for certain kinds of work we have got out the above. We make this in only two sizes of drum, one for ordinary general hoisting work, and one for lighter hoisting at a more rapid rate.

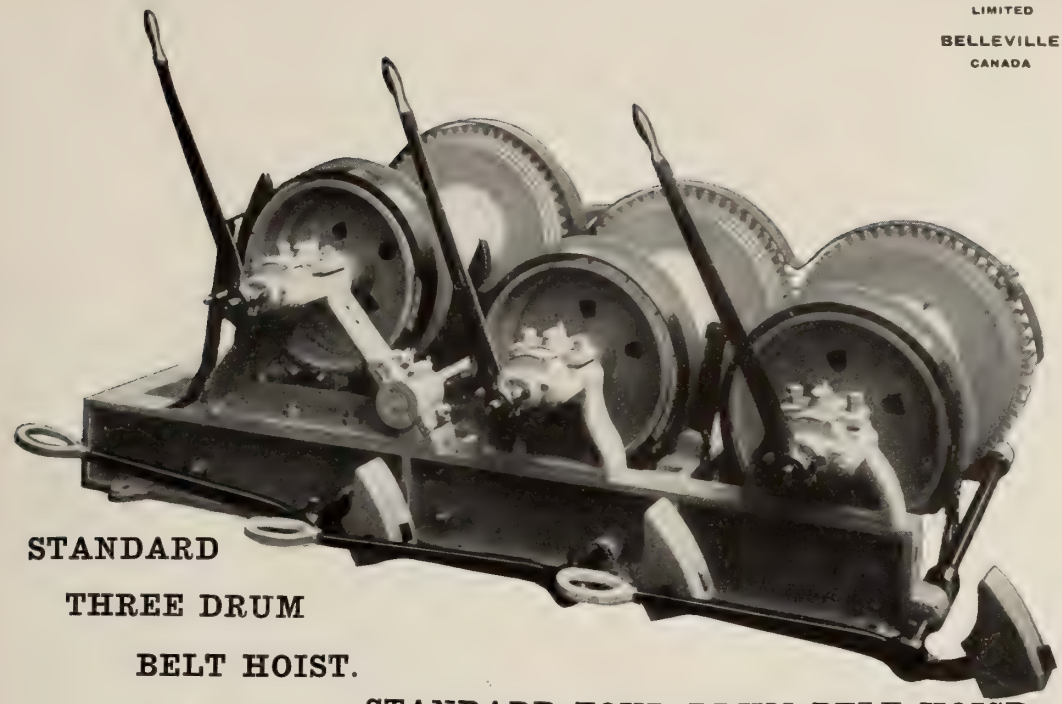
The illustration shows the hoist without a base, but ready for bolting to a floor or to beams, or wherever it is to be placed. We also mount it on a cast iron base, same as shown on page 76, according to the requirements of the customer.

Owing to the extra work involved in making a drum of this style, together with the necessity of bolting the ratchet and friction to the drum instead of casting them on, this style of hoist is more expensive than that with the plain drum.

We furnish any size of pulley to suit the customer up to thirty inches in diameter, and six inch face.

Horse Power required	DRUM Diameter, inches	DRUM Length, inches,	Revolutions of Pulley	Weight Hoisted with single line, LBS.	Hoisting Speed per Minute, FEET	Estimated Shipping Weight with Iron Base, LBS.	Code Word, with Iron Base	Code Word, without Base
	15	24	240	2300	210	1700	Banner	Basalt
15	21	22	240	1700	300	2100	Bannock	Basic
	15	24	230	3300	200	1800	Banquet	Basinet
20	21	22	230	2300	290	2200	Bantam	Basket
	15	24	210	4500	180	1900	Banyan	Basil
25	21	22	210	3000	260	2300	Baptist	Bastard
	15	24	200	6600	150	2500	Bark	Basso
32	21	22	200	4600	230	2800	Barbute	Bastile
	15	24	190	9000	140	3000	Bardie	Bassoon
40	21	22	190	6000	220	3300	Barbecue	Bastion
	15	24	190	11000	140	3100	Batagur	Buttonhole
50	21	22	190	7400	220	3400	Batara	Butternut

All the general details of construction of all our Belt Hoists are the same as in our steam driven Hoists, and as far as possible all parts are interchangeable with the like parts on the steam hoists.

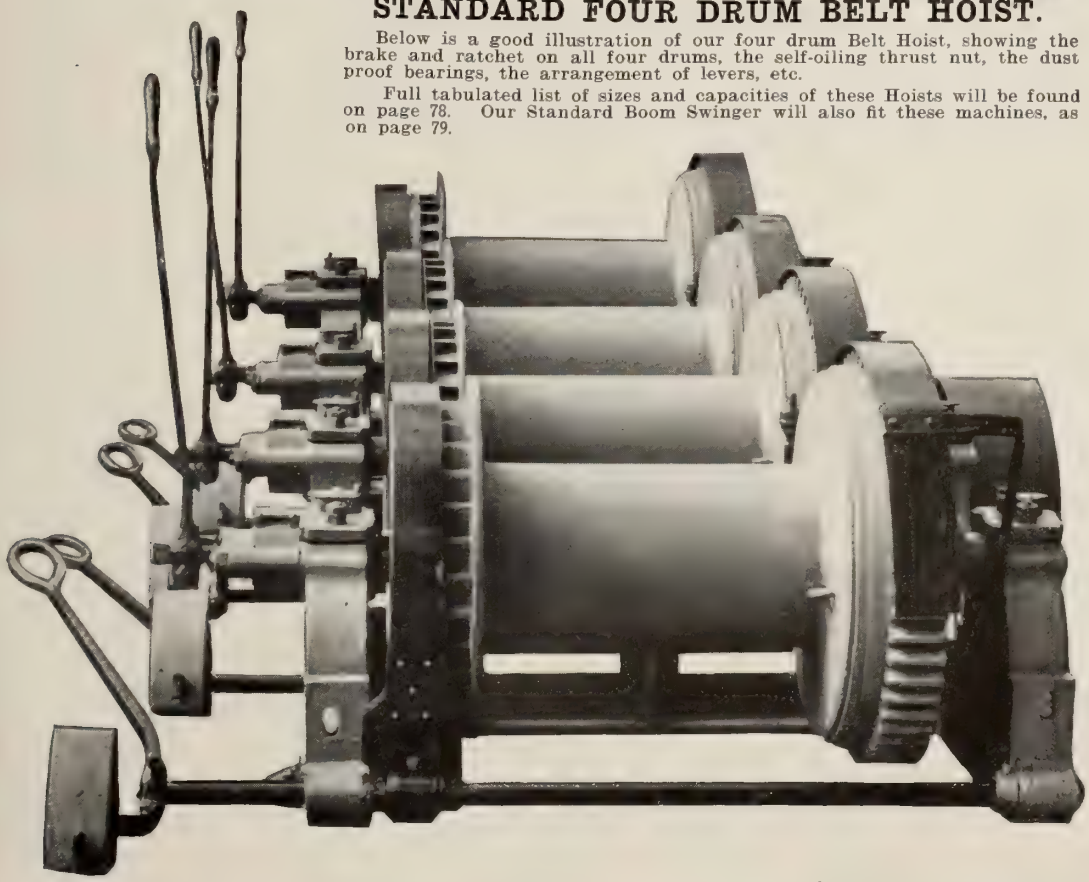


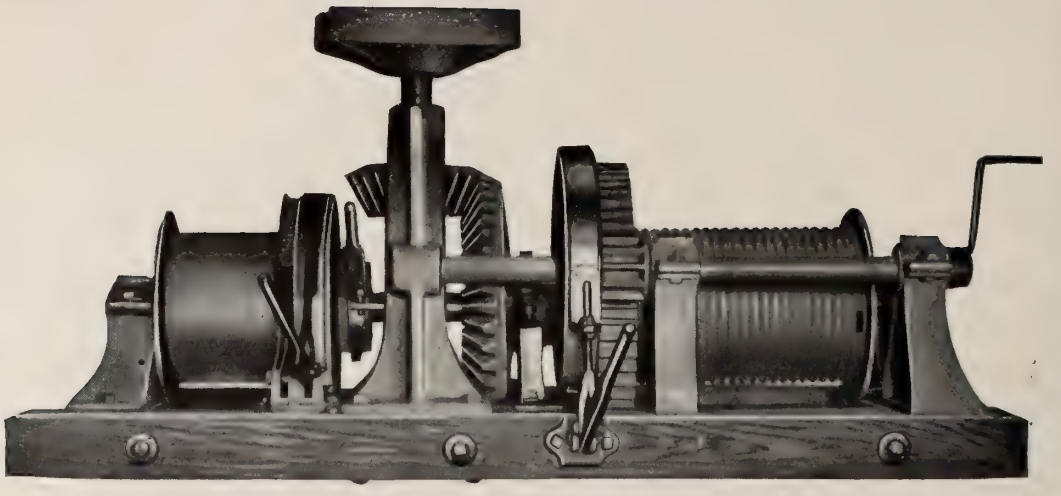
STANDARD THREE DRUM BELT HOIST.

STANDARD FOUR DRUM BELT HOIST.

Below is a good illustration of our four drum Belt Hoist, showing the brake and ratchet on all four drums, the self-oiling thrust nut, the dust proof bearings, the arrangement of levers, etc.

Full tabulated list of sizes and capacities of these Hoists will be found on page 78. Our Standard Boom Swinger will also fit these machines, as on page 79.



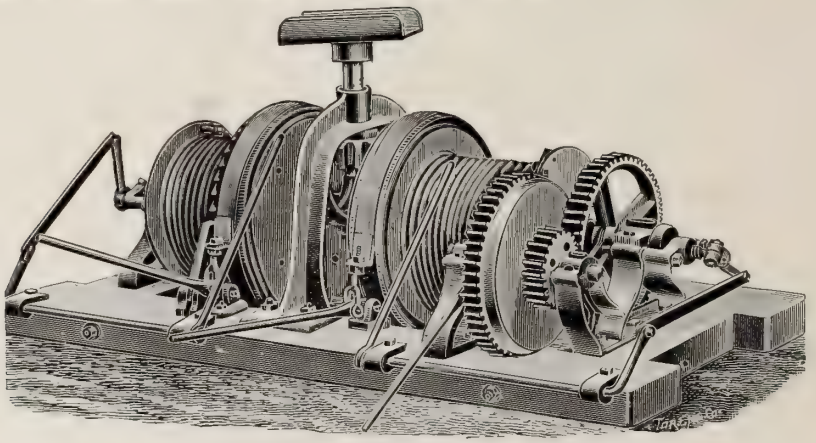


DOUBLE CLUTCH DRUM.

Horse Power Hoist.

Adapted for any kind of general hoisting work where speed in hoisting is not essential. Band brakes on each drum.

Boom Drum		Main Fall Drum		Proportion of Gearing	Estimated Weight Hoisted with single line,	Estimated Shipping Weight	Hoisting Speed per Minute,	Code Word
Diam. inches	Length, inches	Diam. inches	Length, inches		LBS.	LBS.	FEET	
15	12	15	24	1 to 2	6000	2000	15	Button



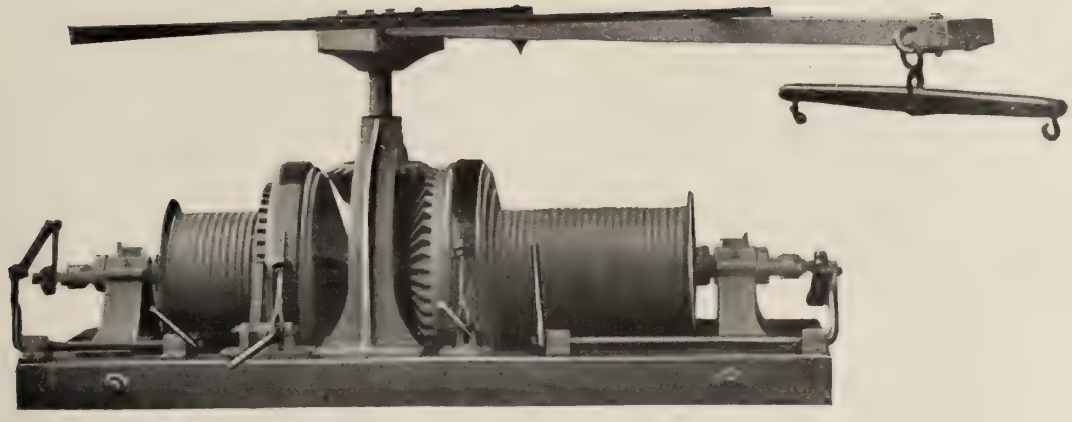
DOUBLE FRICTION DRUM.

Horse Power Hoist.

With Speed Gear for Winding up the Slack Rope Quickly by Power Instead of by Hand.

This hoist is the same as the friction drum hoist shown on the opposite page, with the addition of the speed gear, and is, we believe, the most perfect horse power hoist that has yet been produced. The specifications are the same as on the opposite page. Shipping weight 2500 lbs. Code word: "Bustle."

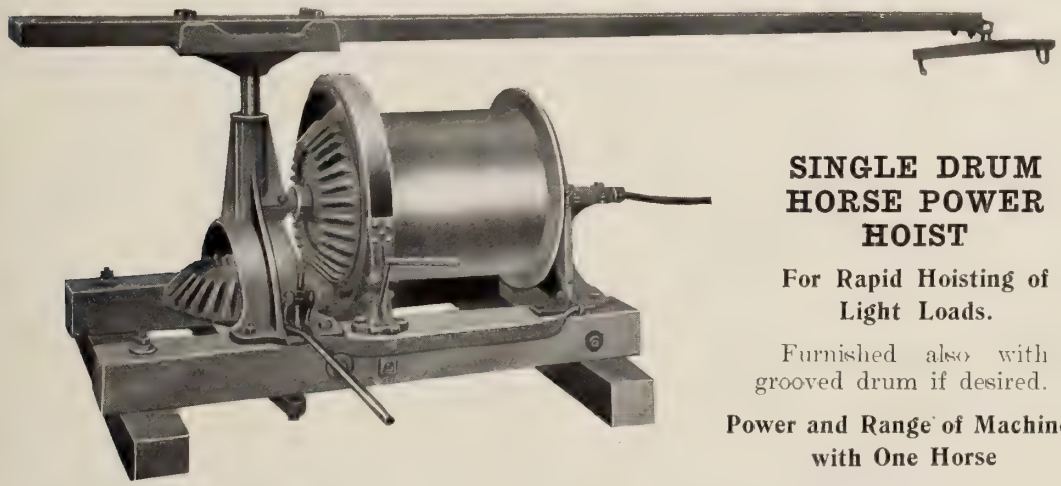
One set of leaders, whiffletree and sweep furnished with either of above Hoists.



DOUBLE FRICTION DRUM HORSE POWER HOIST.

This machine is essentially the same as that shown on the opposite page, excepting that the drums are operated by friction instead of by a clutch, by which a considerable saving of time can be effected in every day's work.

Boom Drum		Main Fall Drum		Proportion of Gearing	Estimated Weight Hoisted with single line, LBS.	Estimated Shipping Weight LBS.	Hoisting Speed per Minute, FEET	Code Word
Diam. inches	Length, inches	Diam. inches	Length, inches					
15	12	15	24	1 to 2	6000	2000	15	Butcher



SINGLE DRUM HORSE POWER HOIST

For Rapid Hoisting of Light Loads.

Furnished also with grooved drum if desired.

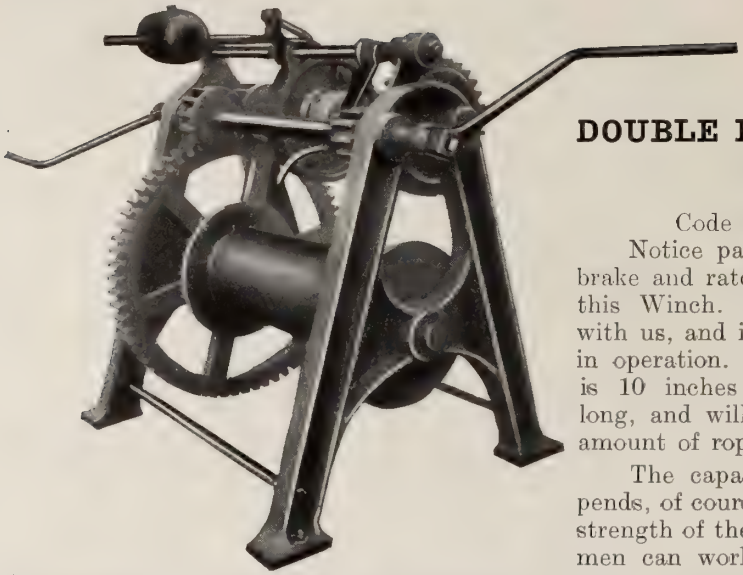
Power and Range of Machine with One Horse

Results obtained with a horse weighing 1,600 pounds working moderately, making six turns per minute.

Single line, no block ..... $1\frac{1}{2}$ tons at 30 feet per minute.
Two lines, or one block ..... 3 tons at 15 feet per minute.
Four lines, or two blocks ..... 6 tons at $7\frac{1}{2}$ feet per minute.
Weight of machine .....1200 pounds.
Horse travels in a circle of .....18 feet diameter.
Drum .....20 inches diameter by 20 inches long.

Telegraph Code—Bustard.

One set of leaders, whiffletree and sweep furnished with either of above hoists.



DOUBLE PURCHASE FLOOR WINCH.

Code Word, "Walnut."

Notice particularly the combination brake and ratchet on the crank shaft of this Winch. This device is exclusive with us, and is both simple and reliable in operation. The drum of this winch is 10 inches diameter and 28 inches long, and will therefore contain a large amount of rope in a single coil.

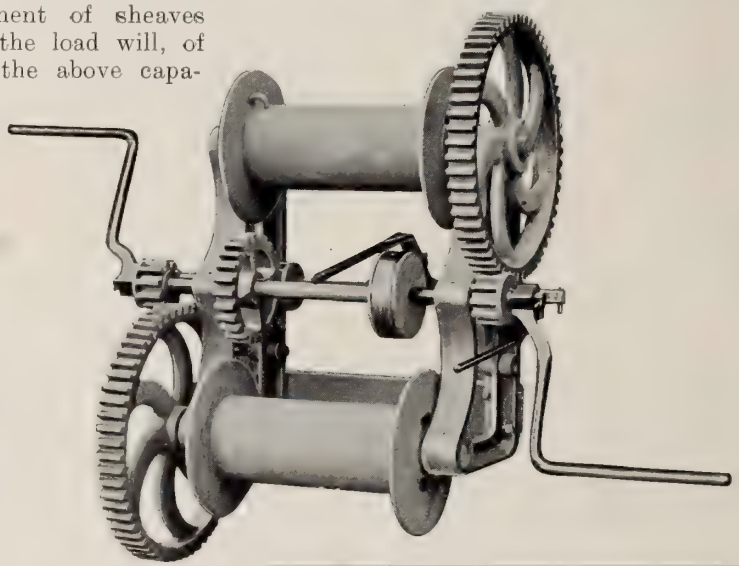
The capacity of a hand winch depends, of course, to a large extent on the strength of the men on the cranks. Four men can work easily on the cranks of this machine, and assuming that each man will exert a constant pressure of fifty pounds throughout the full circle of the crank, the machine will lift the following loads:
With crank on single purchase: One man will lift 880 lbs. Four men will lift 3320 lbs.
With crank on double purchase: One man will lift 2420 lbs. Four men will lift 9680 lbs.

A suitable arrangement of sheaves between the winch and the load will, of course, greatly increase the above capacities

DOUBLE DRUM, DOUBLE PURCHASE MAST WINCH

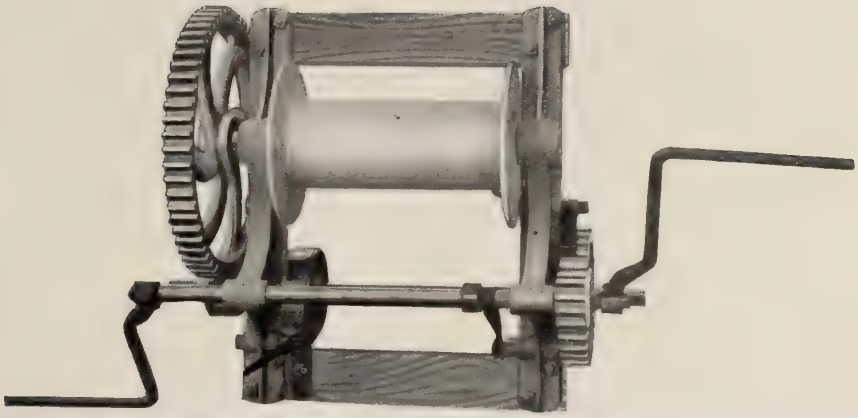
Made in Two Sizes, each size with two diameters of drums.

Note the one-piece cast iron frame, with all bearings cast in place. This is much better than the old method of bolting separate bearings to supports of wood.



Estimating that one man will exert an effective pressure of fifty pounds on the crank, this winch will have the following capacities:

	Small Size		Large Size	
	Drum 5″ x 15″ Code Word Waffle	Drum 7″ x 15″ Code Word Waif	Drum 6″ x 20″ Code Word Wallet	Drum 8″ x 20″ Code Word Waxwork
With crank on single purchase, one man will lift	1100 lbs.	1000 lbs.	1500 lbs.	940 lbs.
With crank on double purchase, one man will lift	4200 "	3000 "	4500 "	2815 "
" " " " " four men will lift			18000 "	11260 "



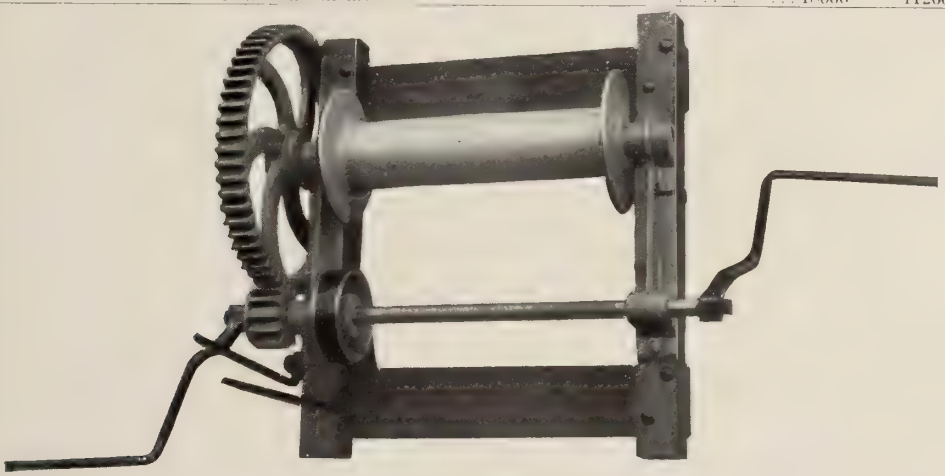
SINGLE DRUM, DOUBLE PURCHASE MAST WINCH.

Made in Two Sizes, each size with Two Diameters of Drums.

Note well the one-piece side frame and bearings, by which all parts are kept permanently in place, which is impossible where bearings are bolted to wood.

Assuming that one man will exert an effective pressure of fifty pounds on the crank, this winch will have the following capacities:

	Small Size		Large Size	
	Drum 5″ x 15″ Code Word Wampum	Drum 7″x 15″ Code Word Warrior	Drum 6″ x 20″ Code Word Wasp	Drum 8″ x 20″ Code Word Wave
With crank on single purchase, one man will lift	1400 lbs.	1000 lbs	1500 lbs.	940 lbs.
With crank on double purchase, one man will lift	4200 "	3000 "	4500 "	2815 "
" " " " " four men will lift			18000 "	11260 "

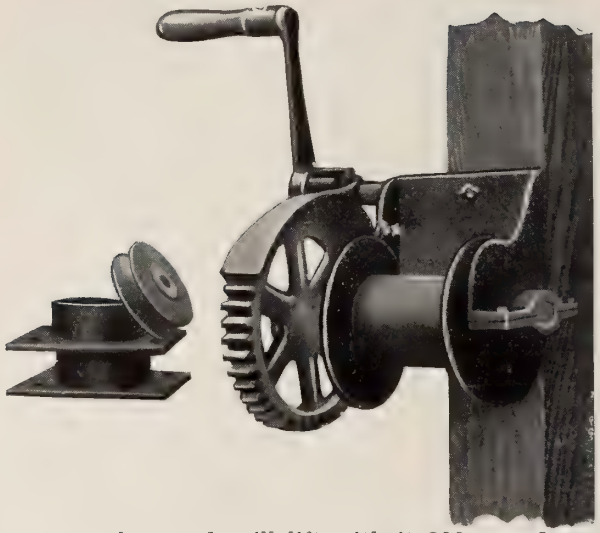


SINGLE DRUM, SINGLE PURCHASE MAST WINCH.

Made in Two Sizes, each size with Two Diameters of Drums.

This winch will develop the following capacities, assuming that one man will exert an effective pressure of fifty pounds on the crank.

	Small Size		Large Size	
	Drum 5″x 15″ Code Word Wayside	Drum 7″ x 15″ Code Word Weevil	Drum 6″ x 20″ Code Word Warden	Drum 8″ x 20″ Code Word Welshman
With crank on drum shaft, one man will lift	300 lbs.	220 lbs.	250 lbs.	190 lbs.
With crank on pinion shaft, one man will lift	1400 "	1000 "	1500 "	940 "
" " " " four men will lift			6000 "	4500 "



SMALL SINGLE PURCHASE MAST WINCH.

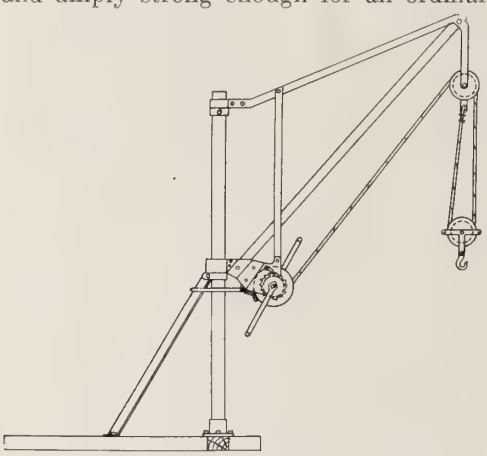
For Light Weight Hoisting.

This small winch, as will be seen, is intended for use with a jib crane. Though small, it is a strong winch, and will be found very handy in a multitude of places where a heavier winch would be too costly. The two sockets shown are to be fitted to the top and bottom of the mast, which is rounded to receive them. The small sheave carries the rope or cable over the point of the boom.

The drum of this winch is 4 inches in diameter by 7½ inches long, and one man on the crank will lift with it 800 pounds, assuming that he exerts an effective pressure of fifty pounds on the crank. By doubling the line between the boom and the load it will of course be possible to lift twice the load. Code Word, "Dacian."

FULL CIRCLE BUILDERS' DERRICK.

This is a new derrick which we have recently designed for the economical handling of heavy materials in the erection of buildings. Both derrick and winch are all metal, and amply strong enough for all ordinary requirements. The whole outfit is light enough to be easily moved about from place to place, or from floor to floor as necessary, and can be taken down and set up again in a very few minutes, the only bolts to be adjusted each time being the lag screws that attach the derrick to the floor or beams. The derrick itself can be separated almost instantly into two pieces, without loosening any bolts or nuts. Each of these two parts is light enough to be carried about by one or two men.



The boom swings the full circle, so a load may be picked up or deposited at any desired point.

The total weight of this outfit, with an eight foot mast, and without the cable, is approximately 340 pounds.

With this derrick, roped as shown, we estimate that two men will hoist 1000 pounds, assuming that each will exert an effective pressure of fifty pounds on the crank.

The drum of the winch is 6 inches diameter, by 7 inches long, and is designed for ⅜ inch cable. Code Word for outfit complete, as shown, but without cable, "Dado." (We supply the cable to special order only).

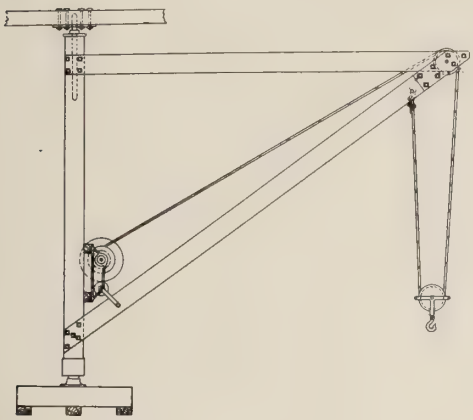
DERRICKS.

We have attempted in the next few pages to show a few of the many styles of Derricks which we manufacture, or for which we supply the irons. To illustrate them all would be an impossibility, owing to the innumerable combinations into which the many derrick parts may be grouped. We have therefore endeavored to show only a few of the leading types of derricks and are ready at any time to supply derricks of any other design demanded by the customer.

A number of hand power derricks are shown, but these by no means exhaust our resources in this line. We will be glad to submit prices on any other style on receipt of a sketch showing the kind preferred.

In the power derricks we illustrate two leading types, one in which the ropes lead up the centre of the mast, and another in which the ropes lead up the side of the mast. In both of these types we show a great variety of styles.

Besides those shown, many other good combinations of derrick irons may be effected, quotations on which will be given cheerfully on application.



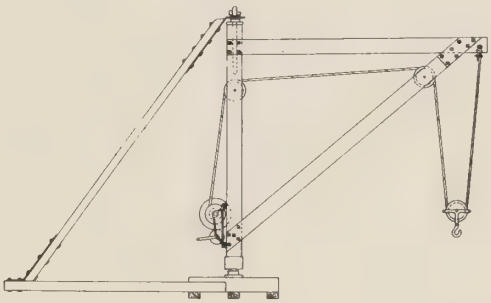
Jib Crane No. 5.

FOR SHOP OR YARD USE.

List of Irons Furnished	Cut No.
1 Mast Shoe	76
1 Socket or Step	76
1 Gudgeon with Washer	—
1 Mast Band, Plain	85
1 Gin Block	61
1 Sheave	50
1 Sheave Pin	53
2 Plates for Point of Boom	—
1 Plate for Gudgeon Pin	—
2 Rope Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	250 lbs.	Dactyl
10 in. square	5 tons	400 lbs.	Daffodil



Jib Crane No. 6.

FOR YARD OR QUARRY USE.

List of Irons Furnished.	Cut No.
1 Mast Shoe	76
1 Socket or Step	76
1 Gudgeon with Key and Washer	87
1 Mast Band, Plain	85
1 Gin Block	61
2 Sheaves	50
3 Sheave Pins	53
2 Plates for Point of Boom	—
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
2 Rope Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	470 lbs.	Daft
10 in. square	5 tons	730 lbs.	Gaiter

Specifications and Lists of Material for Hand Power Derricks Shown Opposite Page.

Derrick No. 7.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
2 Sheaves	50
2 Sheave Pins	53
1 Boom Band, with Two Links	98
1 Gin Block	61
2 Cable Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	500 lbs.	Dagger
10 in. square	5 tons	950 lbs.	Galafy
12 in. square	8 tons	1400 lbs.	Dagoba

Derrick No. 8.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
1 Mast Bracket, with Sheave and Bolts	56
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
1 Gin Block	61
2 Cable Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	600 lbs.	Dahlia
10 in. square	5 tons	1025 lbs.	Dahoon
12 in. square	8 tons	1475 lbs.	Daiker

Derrick No. 9.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 ....Rope Guy Cap	90 or 91
1 Mast Bracket, with Bolts and 2 Sheaves	57
2 Gin Blocks	61
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
4 Cable Clips, for Main Cables	96
Cable Clips, for Guy Wires	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	520 lbs.	Galley
10 in. square	5 tons	950 lbs.	Dale
12 in. square	8 tons	1300 lbs.	Dampish

Derrick No. 10.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
1 Mast Bracket, with Bolts and 2 Sheaves	57
2 Gin Blocks	61
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
4 Cable Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	620 lbs.	Dammar
10 in. square	5 tons	1100 lbs.	Daniel
12 in. square	8 tons	1540 lbs.	Damson

Derrick No. 11.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 ....Rope Guy Cap	90 or 91
3 Sheaves	50
3 Sheave Pins	53
1 Boom Band, with Two Links	98
2 Gin Blocks, Plain	61
1 Gin Block, with Hook and Becket	69
4 Cable Clips, for Main Cables	96
Cable Clips, for Guy Wires	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	525 lbs.	Dandor
10 in. square	5 tons	975 lbs.	Danish
12 in. square	8 tons	1375 lbs.	Danite

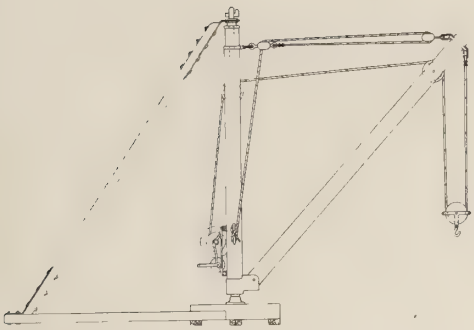
Derrick No. 12.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
3 Sheaves	50
3 Sheave Pins	53
1 Boom Band, with Two Links	98
2 Gin Blocks	61
1 Gin Block, with Hook and Ratchet	69
4 Cable Clips	96

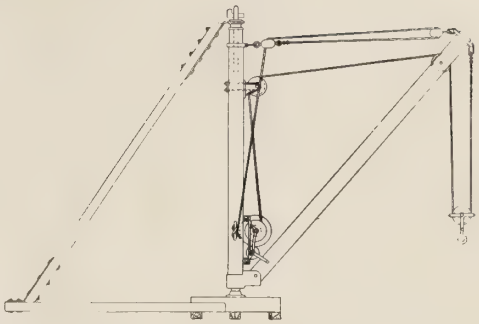
Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	630 lbs.	Daphne
10 in. square	5 tons	1100 lbs.	Dapper
12 in. square	8 tons	1600 lbs.	Darby

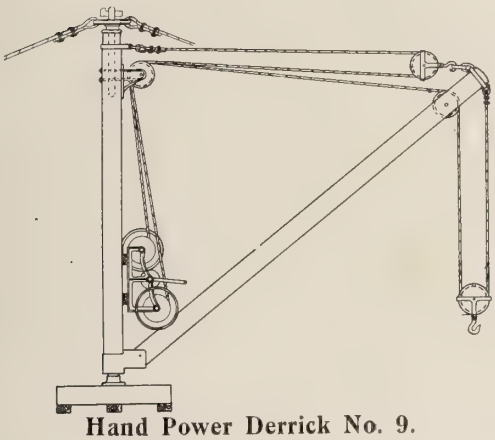
HAND POWER DERRICKS.



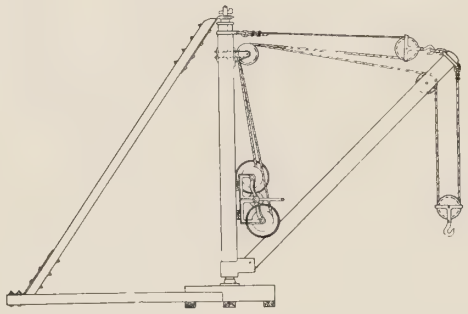
Hand Power Derrick No. 7.



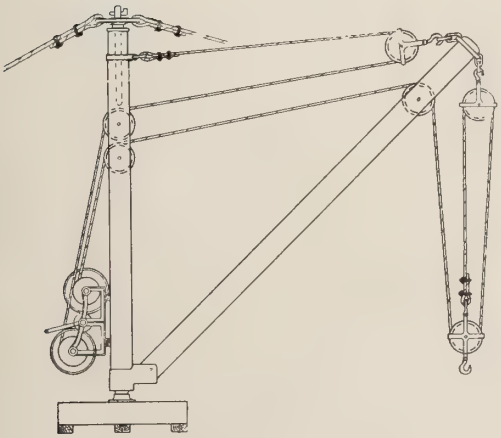
Hand Power Derrick No. 8.



Hand Power Derrick No. 9.



Hand Power Derrick No. 10.



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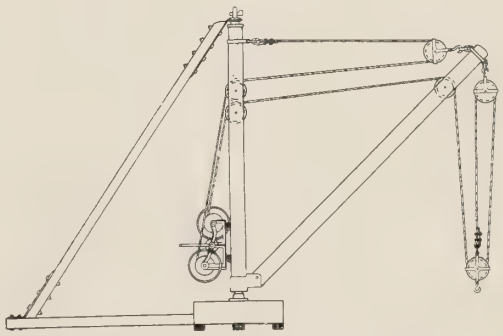


Hand Power Derrick No. 12.

Specifications and Lists of Material for Derricks Shown on Opposite Page.

Derrick No. 13.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
1 ....Rope Guy Cap	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
3 Sheaves	50
3 Sheave Pins	53
1 Boom Band, with Two Links	98
1 Gin Block	61
2 Cable Clips for Main Cable	96
Cable Clips for Guy Wires	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	440 lbs.	Daredevil
10 in. square	5 tons	870 lbs.	Darky
12 in. square	8 tons	1225 lbs.	Darnel
14 in. square	12 tons	1450 lbs.	Daroga

Derrick No. 14.

List of Irons Furnished	Cut No.
1 Mast and Boom Shoe	77
1 Plain Step	76
1 Gudgeon, with Key and Washer	87
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
3 Sheaves	50
3 Sheave Pins	53
1 Boom Band, with Two Links	98
1 Gin Block	61
2 Cable Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	525 lbs.	Darsis
10 in. square	5 tons	975 lbs.	Dart
12 in. square	8 tons	1450 lbs.	Dartman
14 in. square	12 tons	1960 lbs.	Dashboard

Derrick No. 15.

List of Irons Furnished	Cut No.
1 Step, with One Sheave	79
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 ....Rope Guy Cap	90 or 91
1 Mast Band, with One Link	89
1 Mast Bracket, with Sheave	55
1 Boom Band, with Two Links	98
1 Sheave Pin	53
1 Sheave	50
1 Gin Block	61
Rope Clips for Guy Wires	96
2 Rope Clips for Main Cable	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	570 lbs.	Dastard
10 in. square	5 tons	1100 lbs.	Damask
12 in. square	8 tons	1370 lbs.	Dandruff
14 in. square	12 tons	1720 lbs.	Dandy

Derrick No. 16.

List of Irons Furnished	Cut No.
1 Step, with One Sheave	79
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Mast Bracket, with Sheave	55
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
1 Gin Block	61
2 Rope Clips for Main Cable	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	660 lbs.	Datary
10 in. square	5 tons	1100 lbs.	Damask
12 in. square	8 tons	1600 lbs.	Damsel
14 in. square	12 tons	2200 lbs.	Dancer

Derrick No. 17.

List of Irons Furnished	Cut No.
1 Step, with One Sheave	79
1 Mast and Boom Shoe, with Sheave	78
1 Wrought Iron Gudgeon, with Key	87
1 Guy Cap, for .... Ropes	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
1 Gin Block	61
Rope Clips for Guy Wires	96
2 Rope Clips for Main Cable	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	530 lbs.	Dation
10 in. square	5 tons	900 lbs.	Dab
12 in. square	8 tons	1300 lbs.	Dabble
14 in. square	12 tons	1600 lbs.	Dabster

Derrick No. 18.

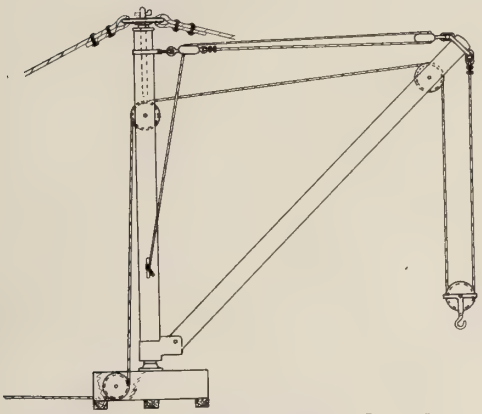
List of Irons Furnished	Cut No.
1 Step, with One Sheave	79
1 Mast and Boom Shoe, with Sheave	78
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Boom Band, with Two Links	98
1 Sheave	50
1 Sheave Pin	53
1 Gin Block	61
2 Rope Clips for Main Cable	96

Specifications.

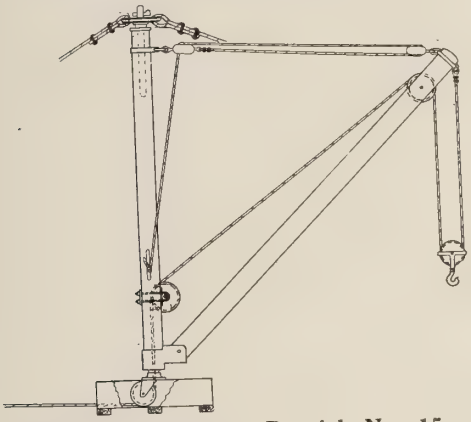
To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	620 lbs.	Datolite
10 in. square	5 tons	1000 lbs.	Dainty
12 in. square	8 tons	1500 lbs.	Dairy
14 in. square	12 tons	2100 lbs.	Daisy

STANDARD DERRICKS FOR ALL KINDS OF SINGLE DRUM HOISTS.

GUY DERRICKS.



Single Drum Power Derrick No. 13.



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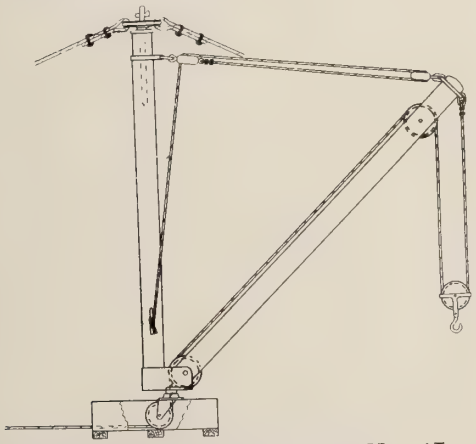
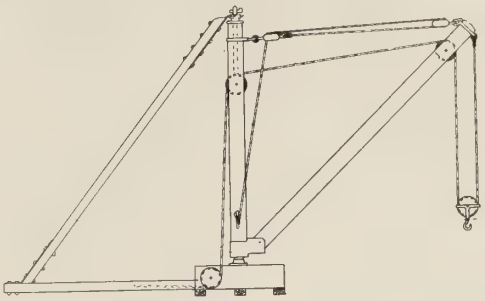


Single Drum Power Derrick No. 17.

STIFF LEG DERRICKS.



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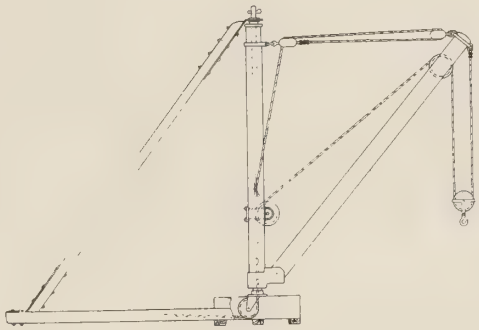

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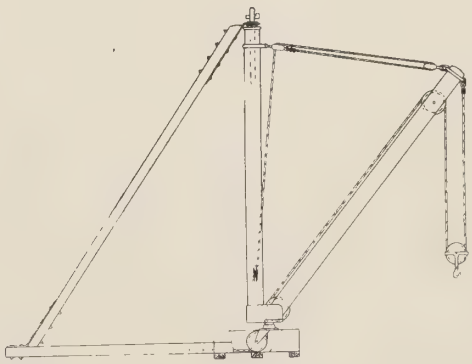


Single Drum Power Derrick No. 18.

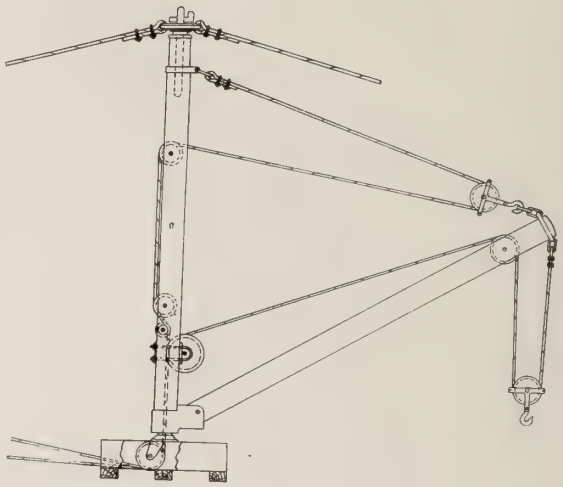
MUSSENS LIMITED, MONTREAL
SALES AGENTS

STANDARD TWO-LINE DERRICKS

For all kinds of General Work.

Guy Derrick No. 19.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 Guy Cap, for .... Ropes	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with Sheave	55
1 Boom Band, with Two Links	98
2 Gin Blocks, with Sheaves	61
1 14 in. Sheave	50
1 12 in. Sheave	50
1 8 in. Sheave	50
1 6 in. Sheave	50
4 Sheave Pins	53
Rope Clips for Guy Wires	96
4 Rope Clips for Main Cables	96

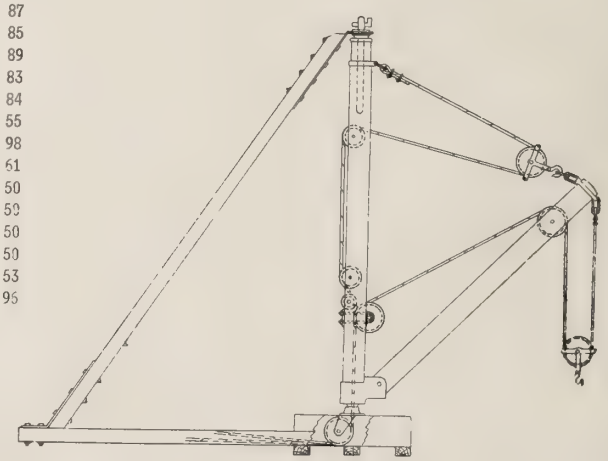


Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	660 lbs.	Daubor
10 in. square	5 tons	1120 lbs.	Daring
12 in. square	8 tons	1500 lbs.	Gambrel
14 in. square	12 tons	1850 lbs.	Darning
16 in. square	15 tons	2350 lbs.	Dauntless

Stiff Leg Derrick No. 20.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Mast Bracket, with Sheave	55
1 Boom Band, with Two Links	98
2 Gin Blocks, with Sheaves	61
1 14 in. Sheave	50
1 12 in. Sheave	50
1 8 in. Sheave	50
1 6 in. Sheave	50
4 Sheave Pins	53
4 Rope Clips for Main Cables	96



Specifications.

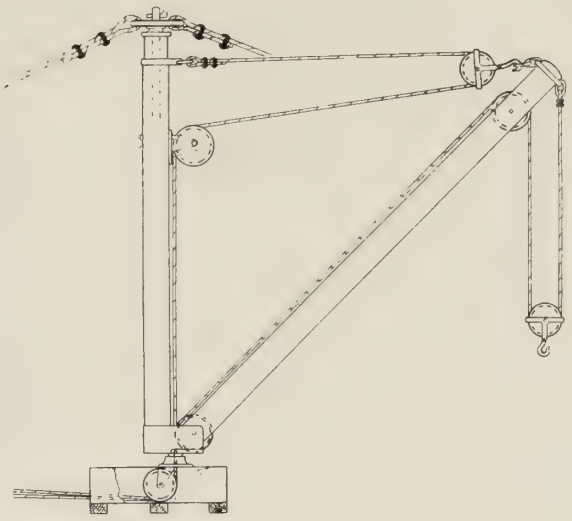
To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	800 lbs.	Dauphin
10 in. square	5 tons	1250 lbs.	Daybrook
12 in. square	8 tons	1750 lbs.	Daybreak
14 in. square	12 tons	2350 lbs.	Daylight
16 in. square	15 tons	3150 lbs.	Dawn

STANDARD TWO-LINE DERRICKS.

For all kinds of General Work.

Guy Derrick No. 21.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe, with Sheave	78
1 Wrought Iron Gudgeon, with Key	87
1 Guy Cap, for .... Ropes	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with One Sheave	56
1 Boom Band, with Two Links	98
2 Gin Blocks, with Sheaves	61
1 Sheave	50
1 Sheave Pin	53
Rope Clips for Guy Wires	96
4 Rope Clips for Main Cables	96

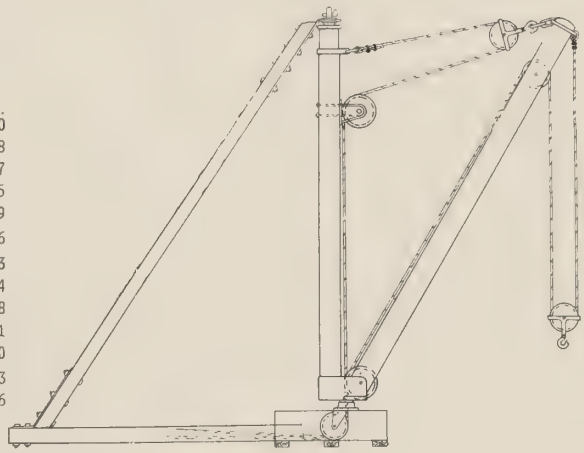


Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	700 lbs.	Deacon
10 in. square	5 tons	1100 lbs.	Diamond
12 in. square	8 tons	1500 lbs.	Dice
14 in. square	12 tons	1875 lbs.	Dicky
16 in. square	15 tons	2400 lbs.	Deanery

Stiff Leg Derrick No. 22.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe, with Sheave	78
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with One Sheave	56
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Boom Band, with Two Links	98
2 Gin Blocks, with Sheaves	61
1 Sheave	50
1 Sheave Pin	53
4 Rope Clips for Main Cables	96



Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
8 in. square	2 tons	900 lbs.	Deanship
10 in. square	5 tons	1200 lbs.	Deadbeat
12 in. square	8 tons	1700 lbs.	Deadhead
14 in. square	12 tons	2350 lbs.	Deadlock
16 in. square	15 tons	3200 lbs.	Debacle

Specifications and List of Material for Derricks Shown on Opposite Page.

Derrick No. 23.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 ....Rope Guy Cap	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with Sheave	55
1 Boom Head, with 2 Bales and 1 Sheave	99 or 101
2 Gin Blocks, with Sheaves	61
1 12 in. Sheave	50
1 8 in. Sheave	50
1 6 in. Sheave	50
3 Sheave Pins	53
Rope Clips for Guy Wires	96
4 Rope Clips for Main Cables	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1400 lbs.	Digest
12 in. square	8 tons	1900 lbs.	Digit
14 in. square	12 tons	2340 lbs.	Dignity
16 in. square	15 tons	2950 lbs.	Debauch

Derrick No. 24.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe	77
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with Sheave	55
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Boom Head, with 2 Bales and 1 Sheave	99 or 101
2 Gin Blocks, with Sheaves	61
1 12 in. Sheave	50
1 8 in. Sheave	50
1 6 in. Sheave	50
3 Sheave Pins	53
4 Rope Clips for Main Cables	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1560 lbs.	Dimple
12 in. square	8 tons	2100 lbs.	Dinner
14 in. square	12 tons	2850 lbs.	Diploma
16 in. square	15 tons	3750 lbs.	Debility

Derrick No. 25.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe, with Sheave	78
1 Wrought Iron Gudgeon, with Key	87
1 ....Rope Guy Cap	90 or 91
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with One Sheave	56
1 Boom Head, with 2 Bales and 1 Sheave	99 or 101
2 Gin Blocks, with Sheaves	61
Rope Clips for Guy Wires	96
4 Rope Clips for Main Cables	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1450 lbs.	Divan
12 in. square	8 tons	1950 lbs.	Dividend
14 in. square	12 tons	2400 lbs.	Divorce
16 in. square	15 tons	3000 lbs.	Debate

Derrick No. 26.

List of Irons Furnished	Cut No.
1 Step with Two Sheaves	80
1 Mast and Boom Shoe, with Sheave	78
2 Bottom Stiff Leg Irons, with Bolts	83
2 Top Stiff Leg Irons, with Bolts	84
1 Wrought Iron Gudgeon, with Key	87
1 Mast Band, Plain	85
1 Mast Band, with One Link	89
1 Mast Bracket, with One Sheave	56
1 Boom Head, with 2 Bales and 1 Sheave	99 or 101
2 Gin Blocks, with Sheaves	61
4 Rope Clips for Main Cables	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1575 lbs.	Discus
12 in. square	8 tons	2200 lbs.	Display
14 in. square	12 tons	2900 lbs.	Disport
16 in. square	15 tons	3900 lbs.	Debenture

Derrick No. 27.

List of Irons Furnished	Cut No
1 Mast and Boom Shoe, with Sheave	78
1 Step with Two Sheaves	80
1 Cast Iron Mast Cap, with Gudgeon	86
1 Shackle	75
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
2 Gin Blocks, Standard	61
1 Gin Block, with Hook and Becket	69
1 Boom Head, with 2 Bales and 1 Sheave	99 or 101
4 Rope Clips	96

Specifications.

To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1650 lbs.	Debut
12 in. square	8 tons	2300 lbs.	Gallipot
14 in. square	12 tons	3100 lbs.	Decameron
16 in. square	15 tons	4100 lbs.	Decanter

Derrick No. 28.

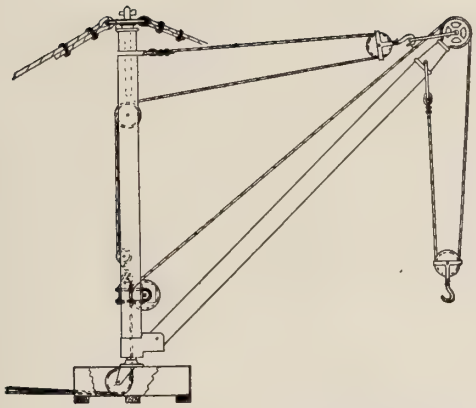
List of Irons Furnished	Cut No.
1 Mast and Boom Shoe, with 2 Sheaves	78
1 Step with three Sheaves	81
1 Mast Bracket, with one Sheave	56
1 Mast Cap, with Gudgeon	86
1 Shackle	75
2 Top Stiff Leg Irons, with Bolts	84
2 Bottom Stiff Leg Irons, with Bolts	83
1 Gin Block	61
1 Boom Head, with 1 Bale and 2 Sheaves	
2 Cable Clips	96

Specifications.

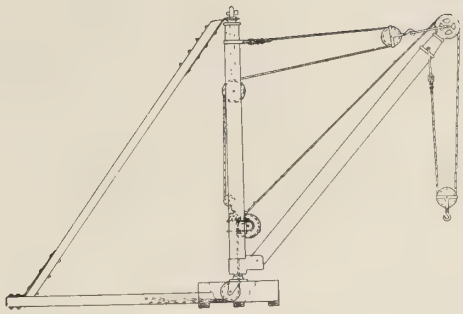
To Fit Mast	To Lift	Shipping Weight	Code Word
10 in. square	5 tons	1775 lbs.	Decapod
12 in. square	8 tons	2400 lbs.	Decare
14 in. square	12 tons	3175 lbs.	Deciduary
16 in. square	15 tons	4175 lbs.	Decegram

HEAVY DERRICKS.

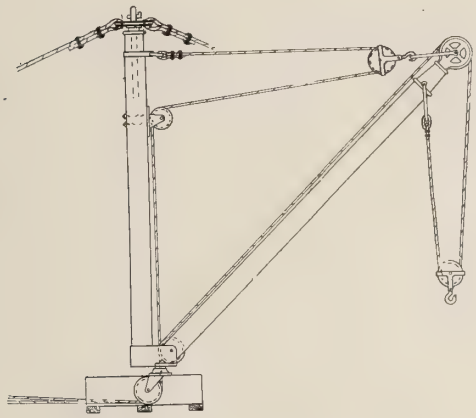
For Special Purposes.



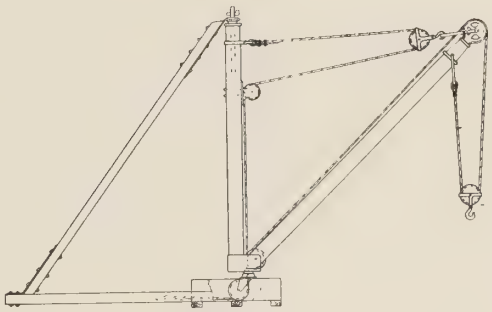
Guy Derrick No. 23, with Boom Head.



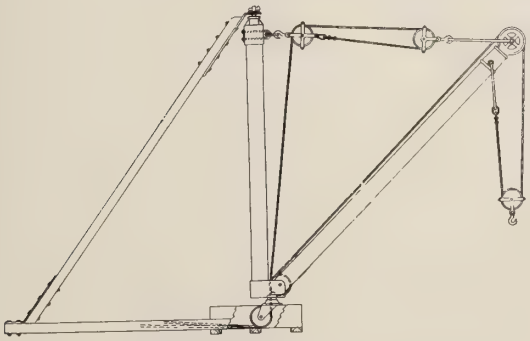
Stiff Leg Derrick No. 24, with Boom Head.



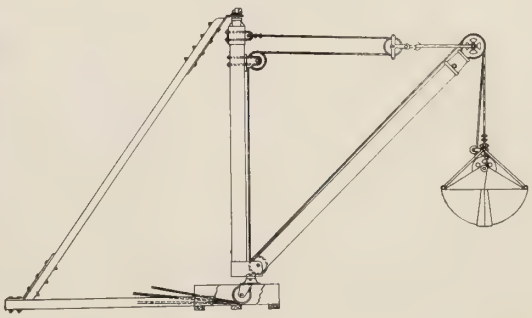
Guy Derrick No. 25, with Boom Head.



Stiff Leg Derrick No. 26, with Boom Head and Mast Cap.

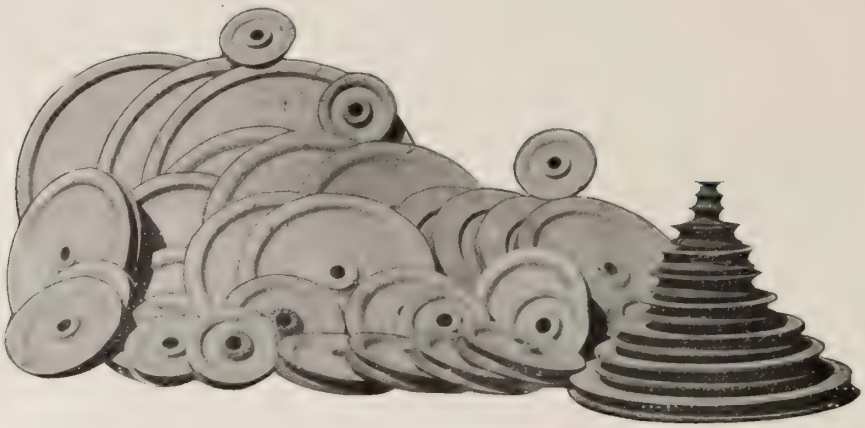


Stiff Leg Derrick No. 27, with Boom Head and Mast Cap.



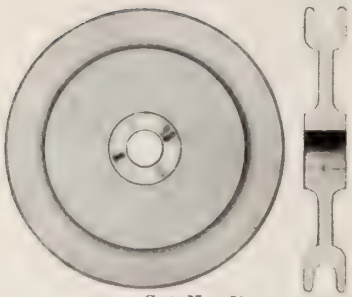
Three Line Derrick, No. 28, with Boom Head and Mast Cap.

MUSSENS LIMITED, MONTREAL
SALES AGENTS



Cut No. 50

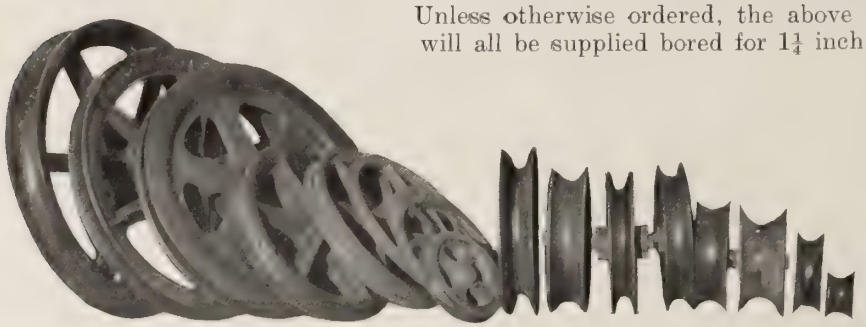
SHEAVES WITH SOLID WEB.



Cut No. 51.

Diameter	Weight	Code Word	Price Not Bushed	Code Word	Price Brass Bushed
6 in.	10 lbs.	Decimetre		Decuman	
8 "	16 "	Decide		Dedans	
10 "	24 "	Declension		Dedimus	
12 "	32 "	Decoction		Deer	
14 "	50 "	Decorum		Defender	
16 "	72 "	Decoy		Defence	
18 "	90 "	Decree		Deferent	
20 "	110 "	Decrement		Defiance	
24 "	130 "	Decretal		Deft	

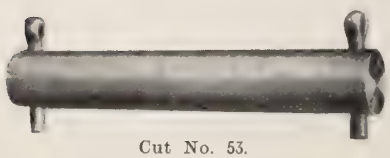
Unless otherwise ordered, the above Sheaves will all be supplied bored for 1¼ inch shaft



Cut No. 52.

SHEAVES, WITH ARMS.

Made in all sizes, and with any depth or width of groove that may be required. Special prices on application.



Cut No. 53.

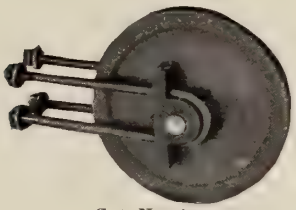
STEEL SHEAVE PINS.

1¼ in Diam. length	3 to 6 in.	6 to 9 in.	9 to 12 in.	12 to 18 in.
Prices each.....	.30	.35	.40	.50

NOTE—All sizes of Sheaves given in this Catalogue are the diameters at the bottom of the groove—not over all.

SINGLE SHEAVE MAST BRACKET

For Back of Mast.



Cut No. 56.

		Estimated Shipping Weight	Code Word
For	2 ton Derrick, 8″ Mast	50 lbs.	Deletion
"	5 " " 10″ "	60 "	Delf
"	8 " " 12″ "	70 "	Delian
"	12 " " 14″ "	82 "	Delicacy
"	15 " " 16″ "	100 "	Delirium

SINGLE SHEAVE MAST BRACKET

For Face of Mast.

Cut No. 55.

		Estimated Shipping Weight	Code Word
For	2 ton Derrick, 8″ Mast. . . .	100 lbs.	Dental
"	5 " " 10″ "	115 "	Dentine
"	8 " " 12″ "	135 "	Dentist
"	12 " " 14″ "	170 "	Dentition
"	15 " " 16″ "	225 "	Dentistry

DOUBLE SHEAVE MAST BRACKET

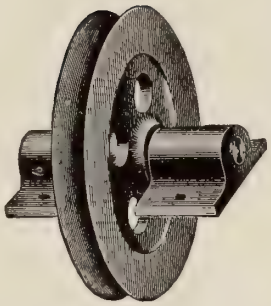
For Face of Mast.

Cut No. 57.

		Estimated Shipping Weight	Code Word
For	2 ton Derrick, 8″ Mast	120 lbs.	Desertion
"	5 " " 10″ "	145 "	Desman
"	8 " " 12″ "	170 "	Desperado
"	12 " " 14″ "	225 "	Despot
"	15 " " 16″ " ...	300 "	Destiny

SHEAVE

with Axle and Solid Boxes. For Point of Boom, etc.

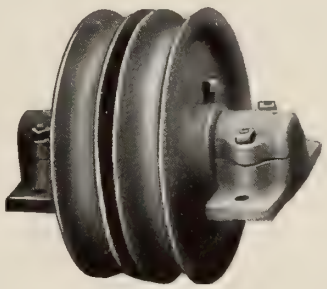


Cut No. 58.

		Code Word for Wire Rope Sheave	Code Word for Manilla Rope Sheave
For	2 ton Load, 10″ Sheave. . .	Delphian	Demeanor
"	5 " " 12″ " . .	Delta	Demijohn
"	8 " " 14″ " . .	Deltoid	Democ a ;
"	12 " " 16″ " . .	Demagogue	Demon
"	15 " " 18″ "	Demain	Denizen

DOUBLE SHEAVES

With Axle and Babbitted Boxes. For head of Pile Drivers, etc.



Cut No. 59.

		Code Word for Wire Rope Sheave	Code Word for Manilla Rope Sheave
For	2 ton Load, 10″ Sheave . .	Deputy	Derry
"	5 " " 12″ " . .	Derelict	Dervish
"	8 " " 14″ " . .	Derm .	Descendant
"	12 " " 16″ " . .	Derogation	Desert
"	15 " " 18″ " . .	Derringer	Deserter

THIRTY INCH SHEAVE

With Axle and Babbitted Boxes. For Top of Mine Shafts, etc.

Cut No. 60.

	Estimated Shipping Weight	Code Word
For loads up to 3,000 lbs.....	190 lbs.	Detective
For loads over 3,000 lbs.....	250 "	Detergent

SINGLE SHEAVE GIN BLOCK

With Standard Hook.

Cut No. 61.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	40 lbs.	Detour
"	5 " "	10″ "	50 "	Detractor
"	8 " "	12″ "	65 "	Detrition
"	12 " "	14″ "	100 "	Detritus
"	15 " "	16″ "	125 "	Deuce

SINGLE SHEAVE GIN BLOCK

With Swivel Hook.

Cut Cut No. 65

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	45 lbs.	Deva
"	5 " "	10″ "	55 "	Developer
"	8 " "	12″ "	70 "	Devonian
"	12 " "	14″ "	110 "	Dextrin
"	15 " "	16″ "	135 "	Dextrose

DOUBLE SHEAVE GIN BLOCK

With Standard Hook.

Cut No. 62.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	60 lbs.	Diadem
"	5 " "	10″ "	80 "	Diagnosis
"	8 " "	12″ "	100 "	Dial
"	12 " "	14″ "	155 "	Dialect
"	15 " "	16″ "	210 "	Dialogue

SINGLE SHEAVE, WIDE ANGLE GIN BLOCK

With Standard Hook.

Cut No. 66.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	45 lbs.	Diana
"	5 " "	10″ "	55 "	Dianthus
"	8 " "	12″ "	70 "	Diapason
"	12 " "	14″ "	105 "	Diaper
"	15 " "	16″ "	130 "	Diary

SINGLE SHEAVE GIN BLOCK.

With Shackle.

Cut No. 63.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	40 lbs.	Diastase
"	5 " "	10″ "	50 "	Diatom
"	8 " "	12″ "	65 "	Dictator
"	12 " "	14″ "	100 "	Diction
"	15 " "	16″ "	125 "	Dictionary

SINGLE SHEAVE, WIDE ANGLE GIN BLOCK (As Above)

With Swivel Hook.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	50 lbs.	Dido
"	5 " "	10″ "	60 "	Diet
"	8 " "	12″ "	75 "	Diffusion
"	12 " "	14″ "	115 "	Digby
"	15 " "	16″ "	135 "	Digitalis

SINGLE SHEAVE GIN BLOCK

With Shackle and Becket.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	55 lbs.	Dill
"	5 " "	10″ "	65 "	Diluvian
"	8 " "	12″ "	85 "	Dimity
"	12 " "	14″ "	115 "	Dingey
"	15 " "	16″ "	145 "	Diorama

EXTRA HEAVY GIN BLOCK

With Swivel Hook.

For overhauling slack cable.

Cut No. 68.

			Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave	95 lbs.	Diphthong
"	5 " "	10″ "	115 "	Dirge
"	8 " "	12″ "	140 "	Diak
"	12 " "	14″ "	180 "	Disciple
"	15 " "	16″ "	210 "	Discipline

SINGLE SHEAVE GIN BLOCK.

With Becket and Standard Hook.

				Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave		55 lbs.	Discourse
"	5 " "	10″ "		65 "	Disguise
"	8 " "	12″ "		85 "	Galosh
"	12 " "	14″ " ...		115 "	Dispensary
"	15 " "	16″ "		145 "	Dispersion

SINGLE SHEAVE GIN BLOCK

With Becket and Swivel Hook

Cut No. 70.

				Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave		60 lbs.	Diurnal
"	5 " "	10″ "		70 "	Diversion
"	8 " "	12″ "		90 "	Divination
"	12 " "	14″ "		120 "	Diviner
"	15 " "	16″ "		155 "	Dixie

SNATCH BLOCK.

Cut No. 71.

				Estimated Shipping Weight	Code Word
For	2 ton Load,	6″ Sheave		30 lbs.	Dogdays
"	5 " "	8″ "		40 "	Dogfish
"	8 " "	10″ "		50 "	Doggerel
"	12 " "	12″ "		60 "	Dogmatism
"	15 " "	14″ "		90 "	Dogskin

Hook for Repairing Swivel Hook Gin Blocks.

Cut No. 72.

			Estimated Shipping Weight	Code Word
For	2 ton Load		10 lbs.	Dissection
"	5 " "		13 "	Distaff
"	8 " "		18 "	Distillery
"	12 " "		25 "	Disuse
"	15 " "		30 "	Ditty

DOUBLE SHEAVE GIN BLOCK

With Becket and Standard Hook.

Cut No. 67.

				Estimated Shipping Weight	Code Word
For	2 ton Load,	8″ Sheave		80 lbs.	Domicile
"	5 " "	10″ "		95 "	Dominician
"	8 " "	12″ "		125 "	Donjon
"	12 " "	14″ "		170 "	Dorian
"	15 " "	16″ "		230 "	Doris

Hook for Repairing Standard Hook Gin Blocks.

Cut No. 73.

			Estimated Shipping Weight	Code Word
For	2 ton Load.		8 lbs.	Dobbin
"	5 " "		10 "	Dodder
"	8 " "		15 "	Doe
"	12 " "		18 "	Doeskin
"	15 " "		25 "	Dog

SWIVEL HOOK

With Eye.

Cut No. 74.

			Estimated Shipping Weight	Code Word
For	2 ton Load,.....		10 lbs.	Doldrums
"	5 " "		12 "	Dolomite
"	8 " "		17 "	Doloroso
"	12 " "		24 "	Dolt.
"	15 " "		30 "	Domain

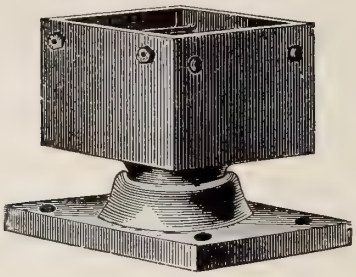
GUY OR CHAIN SHACKLE

Cut No. 75.

		Price	Code Word
$\frac{3}{4}$	inch iron.	$0.60	Dormant
$\frac{7}{8}$	" "	0.70	Dormitory
1	" "	1.00	Dormouse
$1\frac{1}{8}$	" "	1.30	Dorsal
$1\frac{1}{4}$	" "	1.90	Dory

FOOT BLOCK.

For Hand Power Derrick.



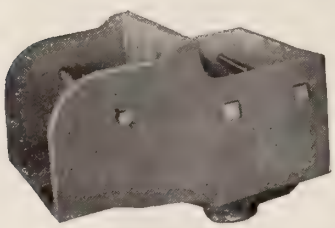
Cut No. 76.

SQUARE MAST SHOE, as above.

			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast	60 lbs.	Dove
"	5 " "	10″ "	75 "	Dowager
"	8 " "	12″ "	110 "	Draco
"	12 " "	14″ "	135 "	Dragoman

PLAIN STEP, as above.

			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast	40 lbs.	Drinker
"	5 " "	10″ "	130 "	Drivel
"	8 " "	12″ "	180 "	Dromedary
"	12 " "	14″ "	200 "	Dropsy



MAST AND BOOM SHOE

With Hub under centre of Mast.

Cut No. 77.

			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast	90 lbs.	Drugstore
"	5 " "	10″ "	275 "	Drugget
"	8 " "	12″ "	415 "	Druid
"	12 " "	14″ "	500 "	Drumlin
"	15 " "	16″ "	600 "	Drumstick

MAST AND BOOM SHOE

With Hub offset to allow Cables to go up face of Mast.

Cut No. 78.

	Estimated Shipping Weight	Code Word with One Sheave	Code Word with Two Sheaves
For 2 ton Derrick, 8″ Mast	150 lbs.	Drupe	Dualism
For 5 ton Derrick, 10″ Mast	310 "	Drusian	Duality
For 8 ton Derrick, 12″ Mast	475 "	Dryad	Ducat
For 12 ton Derrick, 14″ Mast	560 "	Drygoods	Duchy
For 15 ton Derrick, 16″ Mast	700 "	Dual	Duction

SINGLE SHEAVE DERRICK STEP

Fitting any of the Mast Shoes on this page.

Cut No. 79.

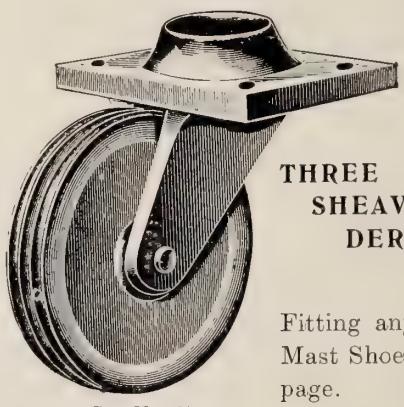
			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast. ...	125 lbs.	Dramatist
"	5 " "	10″ "	210 "	Drapery
"	8 " "	12″ "	300 "	Dresser
"	12 " "	14″ "	400 "	Dribble
"	15 " "	16″ "	500 "	Driftwood

DOUBLE SHEAVE DERRICK STEP

Fitting any of the Mast Shoes on this page.

Cut No. 80.

			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast	170 lbs.	Drosky
"	5 " "	10″ "	260 "	Drouth
"	8 " "	12″ "	360 "	Drover
"	12 " "	14″ "	460 "	Drubbing
"	15 " "	16″ "	575 "	Drudge

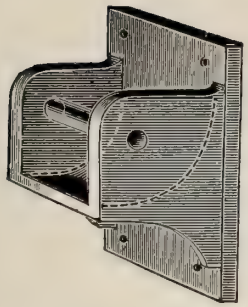


THREE SHEAVE DERRICK STEP

Fitting any of the Mast Shoes on this page.

Cut No. 81.

			Estimated Shipping Weight	Code Word
For	2 ton Derrick,	8″ Mast	210 lbs	Ductor
"	5 " "	10″ "	310 "	Dudeen
"	8 " "	12″ "	410 "	Duello
"	12 " "	14″ "	515 "	Duema
"	15 " "	16″ "	650 "	Dugong



BOOM SHOE

for Bolting to face of Mast of Hand Power Derricks

Cut No. 82.

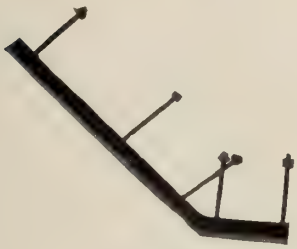
			Estimated Shipping Weight	Code Word
For 2 ton Derrick,	8″	Mast.....	30 lbs.	Dugout
" 5 "	"	10″ "	55 "	Dukedom
" 8 "	"	12″ "	90 "	Dulcet

CAST IRON MAST CAP

With Wrought Iron Gudgeon and U. Bolt.

Cut No. 86.

			Estimated Shipping Weight	Code Word
For 5 ton Derrick		10″ Sq. Mast.	265 lbs.	Dulcimer
" 8 "	"	12″ " " .	330 "	Dulcite
" 12 "	"	14″ " " .	460 "	Dulse
" 15 "	"	16″ " " .	600 "	Dummy



BOTTOM IRONS

with Bolts, for Stiff Leg Derricks

Cut No. 83.

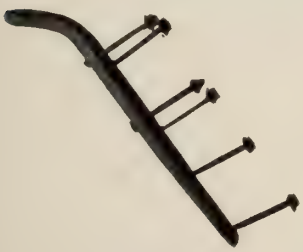
			Estimated Shipping Weight		Code Word
For 2 ton Derrick,	8″	Mast	80 lbs.	ea.	Dune
" 5 " "	10″	"	110 "	"	Dunker
" 8 " "	12″	"	150 "	"	Durbar
" 12 " "	14″	"	260 "	"	Duress
" 15 " "	16″	"	400 "	"	Durga

WROUGHT IRON GUDGEON.

With Key and Washer.

Cut No. 87.

		Estimated Shipping Weight	Code Word
For 2 ton Derrick.		40 lbs.	Duvet
" 5 " "		65 "	Dux
" 8 " "		110 "	Dyak
" 12 " "		150 "	Dyer
" 15 " "		190 "	Dyehouse



TOP IRONS and BOLTS

for Stiff Leg Derricks.

Cut No. 84.

			Estimated Shipping Weight		Code Word
For 2 ton Derrick,	8″	Mast	100 lbs.	ea.	Durian
" 5 " "	10″	"	165 "	"	Dusk
" 8 " "	12″	"	260 "	"	Duster
" 12 " "	14″	"	470 "	"	Dutch
" 15 " "	16″	"	700 "	"	Dutchman

DOUBLE GOOSE NECKS

For Derrick Boats, Derrick Cars, etc.

Made to order only, any required angle.

Cut No. 88.

		Estimated Shipping Weight	Code Word
For 2 ton Derrick.		125 lbs.	Dynasty
" 5 " "		170 "	Dace
" 8 " "		265 "	Dacoit
" 12 " "		385 "	Daimen
" 15 " "		550 "	Daintiness

MAST BAND

For top of Mast, to Prevent Splitting.

Cut No. 85.

				Estimated Shipping Weight	Code Word
For 2 ton Derrick,	8″	Mast	Base	15 lbs.	Dalliance
" 5 " "	10″	"	"	20 "	Dalmatian
" 8 " "	12″	"	"	27 "	Datum
" 12 " "	14″	"	"	32 "	Daughter
" 15 " "	16″	"	"	50 "	Davit

MAST BAND

With One Link.

Cut No. 89.

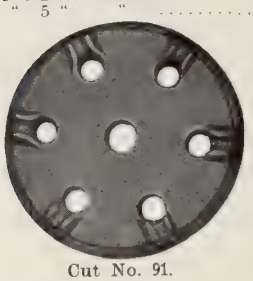
				Estimated Shipping Weight	Code Word
For 2 ton Derrick,	8″	Mast	Base	23 lbs.	Dean
" 5 " "	10″	"	"	25 "	Dearth
" 8 " "	12″	"	"	35 "	Decagon
" 12 " "	14″	"	"	40 "	Delight
" 15 " "	16″	"	"	60 "	Demeter

Cut No. 90.

Cast Iron Guy Cap with Wrought Iron Band

For 5 Guy Wires.

	Estimated Shipping Weight	Code Word
For 2 ton Derrick	70 lbs.	Fable
" 5 " "	140 "	Fabric



Cut No. 91.

Cast Iron Guy Cap with Wrought Iron Band.

For 6 Guy Wires.

	Estimated Shipping Weight	Code Word
For 8 ton Derrick	170 lbs.	Fang
" 12 " "	170 "	Fantan
" 15 " "	250 "	Faro

Cut No. 92.

Single Sheave Plates for either Mast or Boom

Code Word—Fauna

Double Sheave Plates for either Mast or Boom.

Code Word—Fawn.

Cut No. 93.

Cast Iron Ball, for Weighting and Lowering Empty Hook.

Price, 3c. per lb.

FIVE LINK GUY CAP.

Cast Iron Centre, Wrought Iron Band, and Swedish Iron Links.

Cut No. 94.

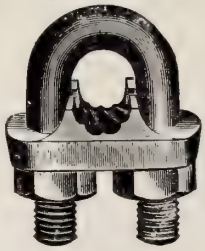
	Estimated Shipping Weight	Code Word
For 2 ton Derrick	114 lbs.	Feat
" 5 " "	114 "	Fad

SIX LINK GUY CAP.

Cast Iron Centre, Wrought Iron Band, and Swedish Iron Links.

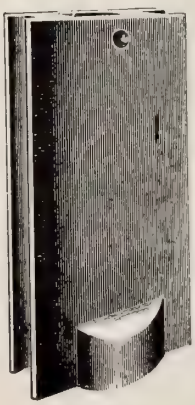
Cut No. 95.

	Estimated Shipping Weight	Code Word
For 8 ton Derrick	195 lbs.	Fagot
" 12 " "	195 "	Fairy
" 15 " "	275 "	Falcon



CABLE CLIPS.

	Code Word
Cut No. 96.	
For $\frac{5}{8}$" or $\frac{3}{4}$" Cable	Fealty
" $\frac{7}{8}$" Cable	Feat
" 1" "	Feather



Cut No. 97.

PILE DRIVING HAMMERS.

We make all sizes of Pile Driving Hammers to order to fit any style of derrick. We make them of a good quality of iron, and at a uniform price of ..... cents per pound, finished.

Code Word—Dustman.

BOOM BAND.

Cut No. 98.

				Estimated Shipping Weight	Code Word
For	2 ton	Derrick,	8″ Boom Base.	15 lbs.	Federal
"	5 "	"	10″ " " .	20 "	Feline
"	8 "	"	12″ " " .	28 "	Felon
"	12 "	"	14″ " " .	32 "	Felucca
"	15 "	"	16″ " " .	50 "	Femur

Cut No. 100.

CAST IRON BOOM HEAD.

With two Sheaves and no Bales.

Full specifications listed below.

Cut No. 99.

Cut No. 101.

Specifications for

CAST IRON BOOM HEAD.

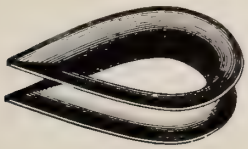
As illustrated above.

	10″ Mast		12″ Mast		14″ Mast		16″ Mast	
	Weight	Code Word	Weight	Code Word	Weight	Code Word	Weight	Code Word
With One Sheave and No Bales....	315	Fenian	450	Festival	525	Fife	635	Fish
With Two Sheaves and No Bales....	350	Fennel	500	Festoon	575	Fig	710	Fizz
With One Sheave and One Bale....	400	Ferment	510	Fetish	585	Filament	720	Flag
With Two Sheaves and One Bale....	440	Fern	550	Fez	635	Filly	795	Flail
With One Sheave and Two Bales....	450	Ferret	560	Fibre	650	Film	800	Flagon
With Two Sheaves and Two Bales ..	490	Fervor	600	Fiddle	700	Finn	875	Flame

THIMBLES.

For Wire Cable.

Code Word, 'Duffer.'



Cut No. 102 .

TURN BUCKLE

For tightening Guy Wires.

Cut No. 103.

Made any length, weight or style required.

Code Word, "Dude."

TAPER SIDE ORE BUCKET.

With Pin and Ring Fastening.

Capacity	Diameter Top	Diameter Bottom	Depth	Weight	Code Word
8 cubic feet	26 in.	23 in.	27 in	270 lbs.	Arab
10 " "	29 "	25 "	30 "	350 "	Acorn
⅜ cubic yard	32 "	27 "	35 "	360 "	Acrobat
½ " "	36 "	31 "	40 "	430 "	Acrostic
1 " "	39 "	34 "	45 "	560 "	Adobe
1½ " "	45 "	40 "	50 "	650 "	Adonis

STRAIGHT SIDE ORE BUCKET

With Pin and Ring Fastening.

Capacity	Diameter	Depth	Weight	Code Word
¼ cubic yard	22 in.	31 in.	250 lbs.	Ab
⅓ " "	25½ "	31 "	285 "	Abott
½ " "	31 "	31 "	320 "	Abel
¾ " "	35 "	37 "	460 "	Abner
1 " "	37 "	43 "	550 "	Abram
1½ " "	43 "	49 "	660 "	Adam

The two Buckets shown above are our standard Mining Buckets, for handling ores, but they can also be used for handling all sorts of materials, either wet or dry. The dumping arrangement is very simple. They are made very strong, to stand rough work, and the price is reasonable.

SHALLOW TUB OR BUCKET.

For handling all sorts of materials, wet or dry.

Capacity in Pounds of Earth	Capacity in Pounds of Coal	Capacity in Cubic Feet	Diameter	Depth of Tub	Height from Bottom to Top of Bail	Estimat'd Weight of Tub	Code Word
600	300	6	25 in.	21 in.	37 in.	150 lbs.	Abalone
800	400	8	29 "	22 "	41 "	175 "	Abattoir
1100	550	11	33½ "	22 "	44 "	220 "	Abbess
1400	700	14	35 "	25 "	49 "	285 "	Abderite
1700	850	17	37½ "	26½ "	51 "	320 "	Abcria
2100	1050	21	39 "	30½ "	56 "	416 "	Abitus
2700	1350	27	42 "	33½ "	60 "	500 "	Abolla
4200	2100	42	48 "	40 "	71 "	750 "	Aborigines

Note.—Special sizes of Buckets or Tubs, other than those listed above, will be made to order. Estimates cheerfully furnished.

BOTTOM DUMPING BUCKET.

For Handling Concrete, or any other material, either wet or dry.

Useful for placing concrete under water.

Bottom is released by pulling rope attached to side lever.

Capacity	Width and Length	Depth	Estimated Weight	Code Word
½ cubic yard.	28 in.	30 in.	475 lbs.	Abroma
¾ " "	30 "	36 "	570 "	Abstinence
1 " "	36 "	36 "	850 "	Abstract
1½ " "	40 "	36 "	1250 "	Abyssinian
2 " "	44 "	48 "	1400 "	Academy
2½ " "	50 "	48 "	1800 "	Acadian
3 " "	54 "	48 "	2100 "	Acarus

Style A.

TAPER SIDE, BOTTOM DUMPING BUCKET.

With Chain Bale and Front Release.

Style B.

TAPER SIDE, BOTTOM DUMPING BUCKET.

With Iron Bale and Front Release.

Table of Weights and Measurements of Bottom Dumping Buckets, with Taper Sides.

Capacity	½ Yard	¾ Yard	1 Yard	1½ Yds.	2 Yds.	2½ Yds.
Height	28 in.	35 in.	36 in.	42 in.	42 in.	48 in.
Width at top	34 "	37 "	44 "	48 "	60 "	56 "
Width at bottom	26 "	27 "	30"	35 "	36½"	40 "
Weight, lbs.	460	560	850	1240	1380	1794
Code Word, Style A	Archon	Acrite	Abhor	Amain	Abrupt	Acrid
Code Word, Style B	Achean	Anon	Abide	Abort	Akin	Adapt
Code Word, Style C	Agog	Adept	Ablaze	Aigret	Acquit	Anise

Style C.

TAPER SIDE, BOTTOM DUMPING BUCKET.

With Chain Bale and Side Release.
In ordering, state style of bail desired.

UNDER WATER CONCRETE BUCKET.

This style bucket has practically revolutionized the practice of lowering and placing concrete under water. It has proven to be a triumph over every other means. It is one of the greatest labor saving as well as economical devices ever invented. These buckets are invaluable to Engineers and Contractors engaged in sub-aqueus work. With this Bucket, concrete can be placed any depth under water, without the aid or expense of divers. When loaded with concrete the bucket is lowered down to the bottom, then by pulling the tug line the catch is released, the bucket begins turning over; when in the reverse position the automatic opening device releases the cover, the entire contents are deposited in a CONCENTRATED MASS right on the spot desired. The wash being reduced to a minimum.

These buckets can be made any size to meet requirements. Prices quoted on receipt of inquiry.

Code Word—Abacus.

No. 1 Standard Self-dumping and Self-righting Buckets with Flaring Sides.

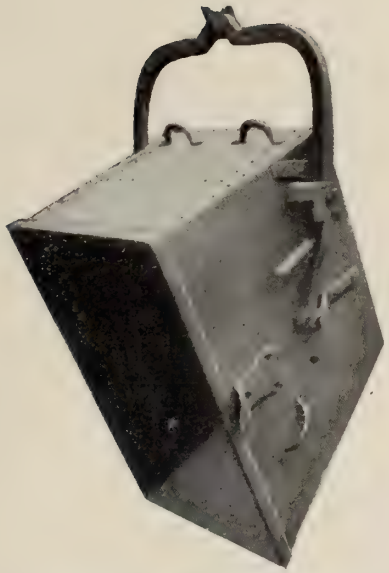
The above engraving represents our special Self-dumping Bucket, made of the best flange steel and iron, with double bottom, extra strong bales and mountings. The sides are flaring and from 8 to 10 inches wider at the top than bottom. It is specially designed for handling stone, sand, clay, concrete and general contractors' work. The bucket is simple in construction and easy to handle.

Capacity Cubic Ft.	Width over all, Inches	Length Ins.	Depth Ins.	Code Word
3	30	26	15	Abattis
4½	32	29	18	Abbey
6	34	31	19	Antagonist
8	36	33	20	Abigail
10	41	36	21½	Abode
12	44	40	23	Aboriginal
14	46	42	25	Absinthe
21	48	47	28	Absentee
27	53	50	31	Abyss
36	65	58	33	Acacia
42	66	59	34½	Acajou

No. 2 Self-dumping and Self-righting Buckets with Straight Sides.

This Engraving represents a bucket very similar to No. 1, but it is not as heavy and has straight sides, consequently does not discharge wet material as freely. These buckets are made of best flange steel and iron, double bottom, strong bales, trunions, and reliable latches, and meet the demand for substantial yet cheap buckets. All buckets carefully made throughout to withstand the rough handling to which they are subjected.

Capacity Cubic Ft.	Width over all, Inches	Length Ins.	Depth Ins.	Code Word
3	28	26	15	Acanthus
5	31	28	18	Accent
6	31½	29	19	Accordion
7	34	30	19	Accretion
8	35	31	19	Ace
10	36	35	21	Acetic
12	38	38	23	Ache
14	38	40	25	Acolyte
18	43	43	27	Aconite
21	45	46	28	Acorn
27	47	50	30½	Acoustic
36	52	54	33	Acquittal
41	54	58	36	Arctic



No. 3 Self-dumping and Self-righting Buckets with Straight Sides and Sharp Corners.

The above Bucket, although somewhat cheaper to make than the rounded corner buckets shown on opposite page, is not so convenient for wet concrete, but is useful for handling stone, earth, sand, and other material on sewer and general construction work. The body of bucket is made low for easy filling and long and narrow to facilitate working in trenches. It is used to advantage on cable conveying systems, either in trenching, or in handling coal, etc., in which case it will trip automatically at any prearranged point. It is neatly and strongly designed, with double bottom. Below we give a list of the regular sizes. Estimates for Buckets made of light material and varying dimensions and capacities will be furnished on request.

Capacity in Cubic Feet	Coal Capacity in Lbs.	Length of Bucket in Inches	Width over all in Inches	Depth in Inches	Code Word
6	300	33	26	19	Acreage
8	400	36	27	22	Acrimony
10	500	41	30	24	Arbor
12	600	42	33	25	Acropolis
14	700	48	33	27	Arable
18	900	48	37	29	Actinic
21	1050	48	43	30	Acrot
27	1350	46	46	31	Actress
27	1350	53	43	29	Actuary
36	1800	58	54	33	Acumen
42	2100	60	58	33	Adage

USEFUL INFORMATION FOR EXCAVATORS OR BUCKET USERS.

18 Cubic feet of Gravel in bank, equals .....1 Ton
27 Cubic feet of Gravel when dry, equals.....1 Ton
25 Cubic feet of Sand, equals .....1 Ton
18 Cubic feet of Earth in bank, equals .....1 Ton
27 Cubic feet of Earth when dry, equals.....1 Ton
17 Cubic feet of Clay, equals .....1 Ton
44.8 Cubic feet of Bituminous Coal, when broken down, equals (1 gross ton).....2240 lbs.
42.3 Cubic feet of Anthracite Coal, when broken down, equals (1 gross ton).....2240 lbs.
70.9 Cubic feet of Coke equals (1 gross ton) 2240 lbs.
123 Cubic feet of Charcoal, equals (1 gross ton) .....2240 lbs.
1 Cubic foot of Water, equals .....62½ lbs.
2150 42-100 Cubic inches, equals .....1 bushel.
1 Cubic yard of Earth is called a Load.
A yard of loose earth weighs .....2,000 pounds
A yard of sand and gravel weighs .....2,700 pounds
A yard of clay weighs .....3,000 pounds
A yard of soft coal weighs .....1,350 pounds
A yard of hard coal weighs .....1,600 pounds
A yard of concrete weighs .....3,500 pounds

STEEL TRAYS OR SKIPS.

For Stone, Earth, etc. Specifications below.

Specifications in all cases include Chain Bale and Automatic Trip release, and these will be sent unless otherwise instructed by the customer.

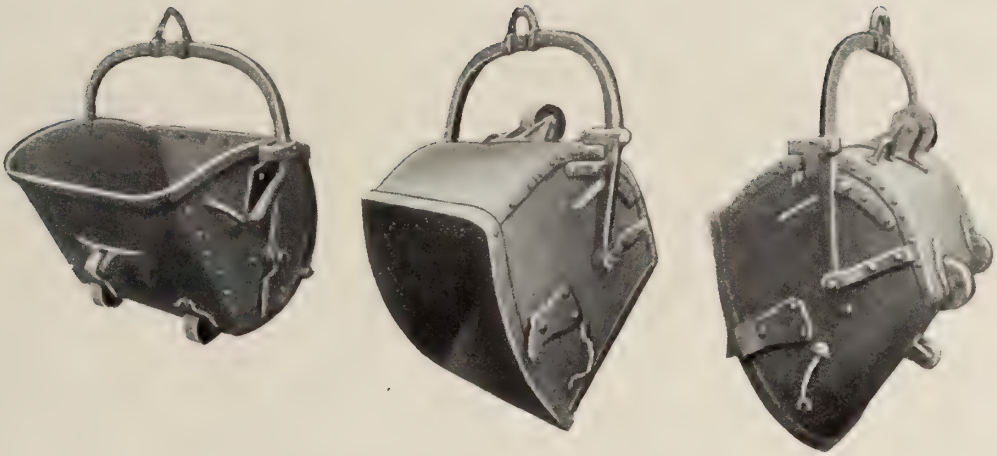
Same as above, but with Chain Bale and Ring Catch.

Supplied also with automatic trip release, if desired, same as shown in illustration of round tray.

We make these Skips any length, width or depth required by the customer, and furnish them with or without chain bale, and with either release preferred. We give herewith some of the commoner sizes.

Heavily reinforced with Angle Iron, and with Automatic Trip Release.

Capacity in Cubic Feet	Width in Feet	Length in Feet	Depth in Inches	Square Edge		Round Edge	
				Weight	Code Word	Weight	Code Word
15	3	4	15	240	Adagio	260	Accession
17	4	5	10	290	Adamant	320	Accolade
20	4	6	10	330	Adamite	365	Accomplice
25	4	5	15	330	Addendum	365	Accuser
35	4	6	18	390	Adder	430	Acephala
35	5	7	12	450	Addle	500	Acerbity
45	5	6	18	600	Adjective	675	Acheron
48	6	8	12	750	Adjuration	830	Achilles
60	6	8	15	850	Adjutant	940	Acidity
73	6	7	23	925	Admiral	1025	Actian
90	6	9	15	975	Admiralty	1075	Adherent
112	7	8	24	1150	Admiror	1300	Adhesion



Automatic Dumping and Self-Righting

COAL BUCKETS.

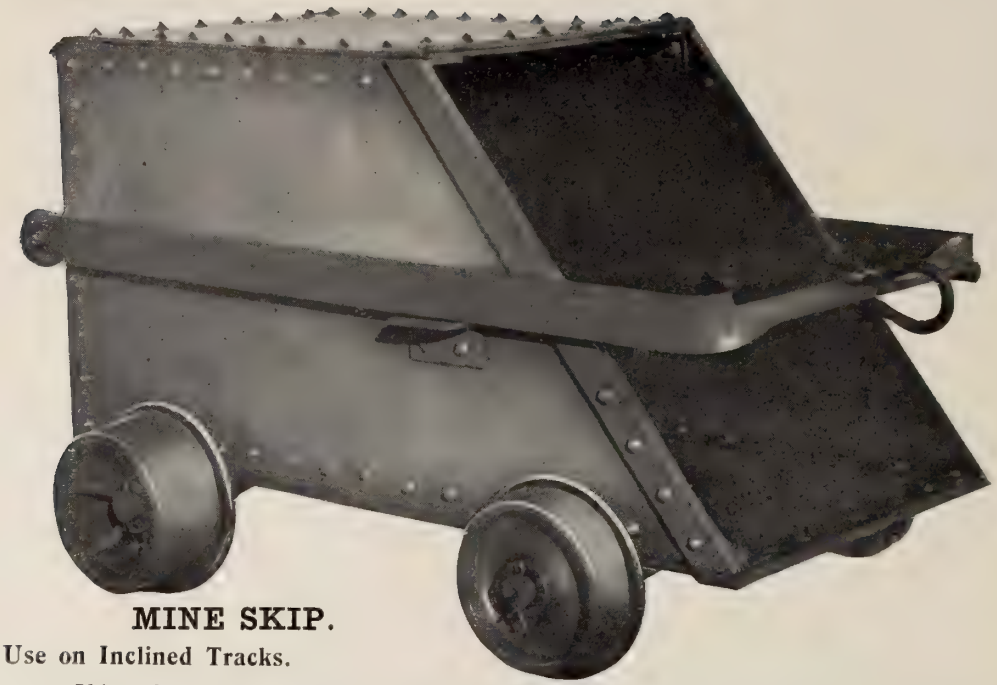
With Side Catch.

Coal Capacity in Pounds	Capacity in Cubic Feet	Approximate Shipping Weight	Code Word Bucket with Side Catch	Code Word Bucket with Back Lever Catch
320	6	155	Admixture	Adventure
370	7	165	Admonish	Adverb
400	8	190	Admonition	Adversary
450	9	200	Admotive	Adversity
500	10	225	Adnation	Advertance
560	11	295	Ado	Advocate
600	12	320	Adolescent	Advocation
700	14	385	Archive	Aegis
800	16	430	Adopter	Aeolian
900	18	450	Adoption	Aeon
1000	20	465	Adornment	Aerial
1200	24	515	Adrift	Aerolite
1500	30	630	Adulation	Aerology
2000	40	810	Adult	Aerometer

Automatic Dumping and Self-Righting

COAL BUCKETS.

With Back Lever Catch.

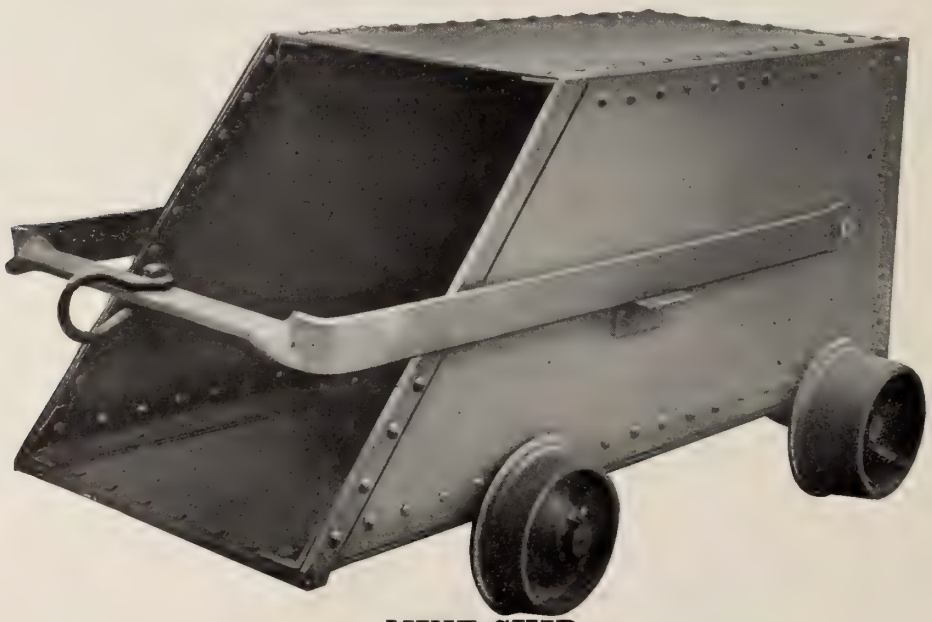


MINE SKIP.

For Use on Inclined Tracks.

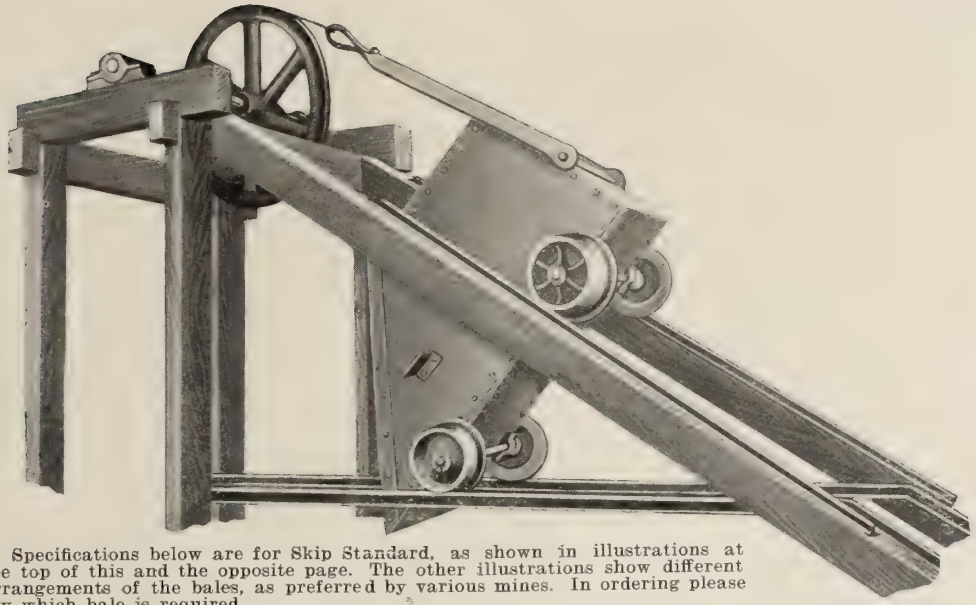
This style of Skip, or Mine Bucket is a general favorite among the larger mines, on account of the ease and simplicity of its operation. The method of using it is clearly shown by the drawing at the top of the opposite page, which needs no further explanation.

We make these Skips any required size, and to fit any gauge of track. On the opposite page we give a few of the commoner sizes, but we will be pleased to submit an estimate at any time on any other size or gauge of track not included in this list.



MINE SKIP.

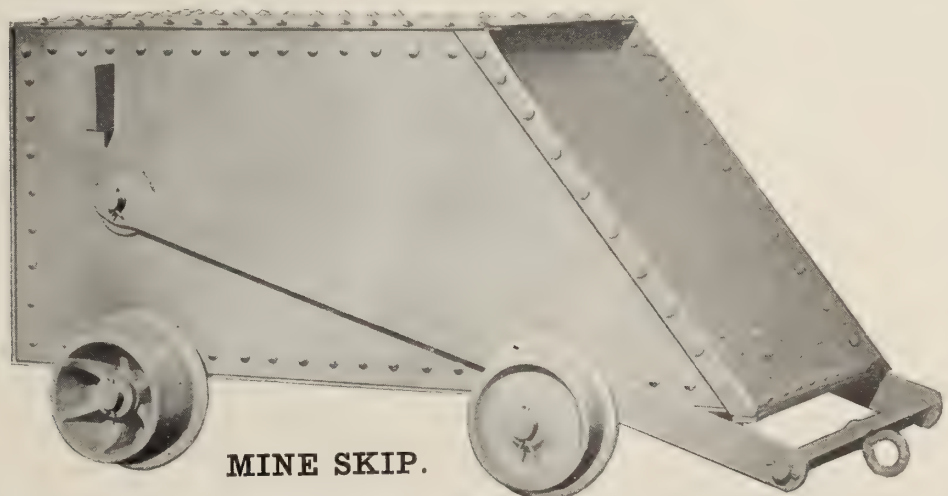
This Skip is the same style, and worked in the same way as the one shown at the top of the page, but, as will be seen, the bale is hinged one foot from the end.



Specifications below are for Skip Standard, as shown in illustrations at the top of this and the opposite page. The other illustrations show different arrangements of the bales, as preferred by various mines. In ordering please say which bale is required.

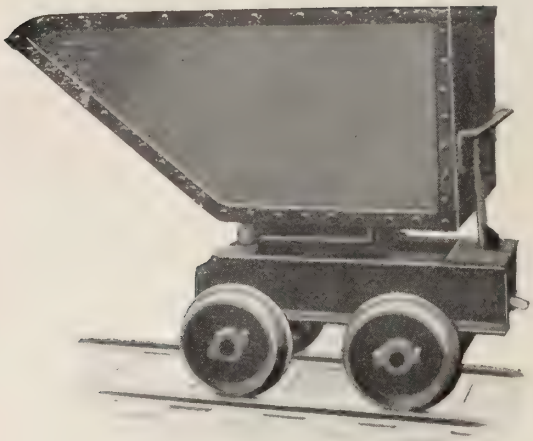
Mean Length	Width	Depth	Capacity in Cubic Feet	Approximate Shipping Weight	Gauge of Track	Code Word
48 in.	24 in.	24 in.	16	1200	30 in.	Aeronaut
60 in.	26 in.	26 in.	24	1250	30 in.	Aerophyte
66 in.	26 in.	30 in.	30	1280	30 in.	Aerostat
48 in.	30 in.	30 in.	25	1325	36 in.	Affection
60 in.	30 in.	30 in.	32	1385	36 in.	Affiance
60 in.	30 in.	36 in.	38	1450	36 in.	Affinitive
66 in.	30 in.	36 in.	42	1520	36 in.	Affinity
72 in.	30 in.	36 in.	45	1600	36 in.	Affiation

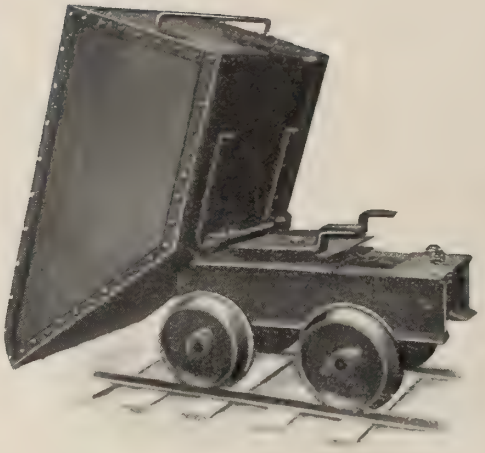
The above shipping weights are based on using 3-8 in. steel plate in bottom and end of Skip, and 1-4 in. steel plate in sides and top. Heavier material than this will be used if necessary. Some of our customers demand 1-2 in. steel plate in bottom and ends, and 3-8 in. sides and tops. We will build these Skips as heavy as necessary to suit the work for which they are intended.



MINE SKIP.

This shows still another arrangement of the bale of these Mine Skips. The bale of this skip drops down clear of the front of the Skip, thus leaving the opening free and unobstructed for filling.





ROTARY SCOOP CARS.

The body of this type of car is supported on a wrought steel turntable and is securely locked to the truck by a treadle catch. When unlocked, it is easily turned on its turntable permitting the load to be dumped at the end or at either side.

The truck frame is constructed of steel I-Beam.

The wheels are of cast iron, chilled on face and have extra wide tread. They are pressed on 2 in. round steel axles turning in cast iron boxes, with babbitted bearings. Plain wheels and axles, or wheels and axles of any other type can also be furnished.

The dimensions, as regularly built, given below are variable to meet special conditions of use.

Unless otherwise ordered, these cars will be built for 18 in. gauge of track.

Capacity in Cubic Feet	Overall Dimensions			Body of Car			Gauge of Steel			Size of Wheels	Size of Axles	Code Word
	Length	Width	Height	Length	Width	Depth	Sides	Bottom	Ends			
18	58″	32″	44″	52″	30″	24″	No. 10	3/16″	No. 10	12″	2″ rd.	Affluence
21	58″	32″	48″	52″	30″	28″	3/16″	¼″	3/16″	12″	2″ rd.	Affray

HEAVY MINE CAR.

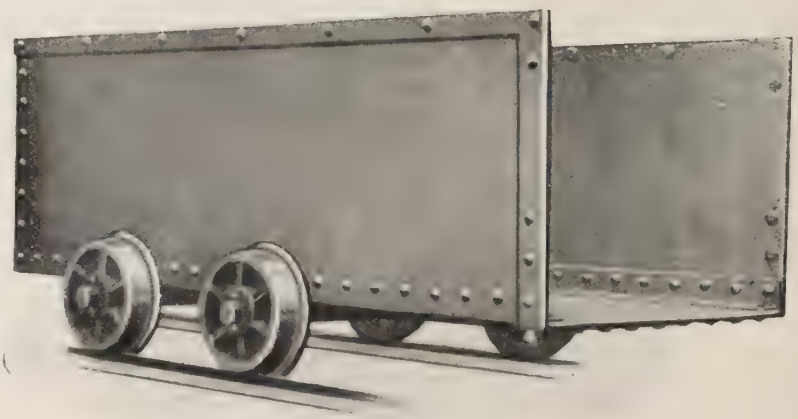
This type of heavy mine car is largely used in the copper regions.

The body is of ¼ in. plate with extra heavy connecting angles and re-enforcing bands.

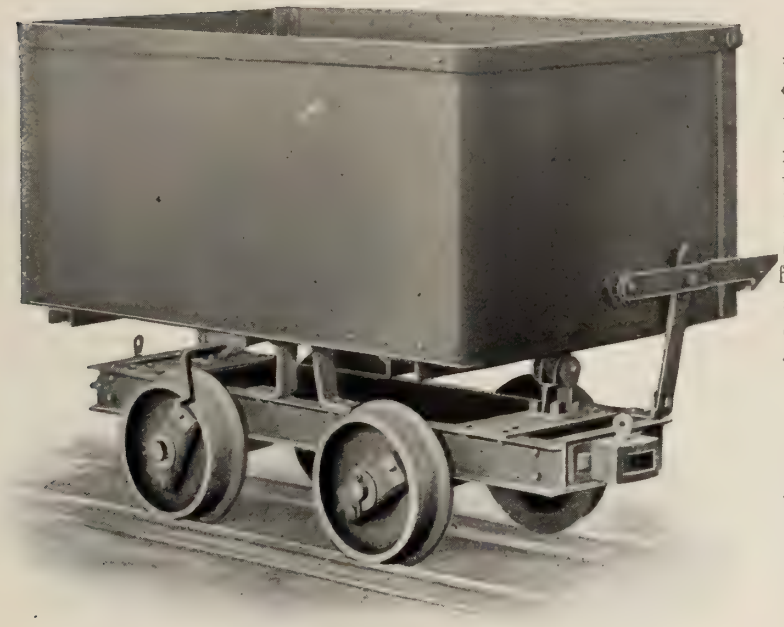
The wheels are of chilled cast iron 12 in. in diameter. They turn on square axles.

This car can be built to any capacity and for any gauge track.

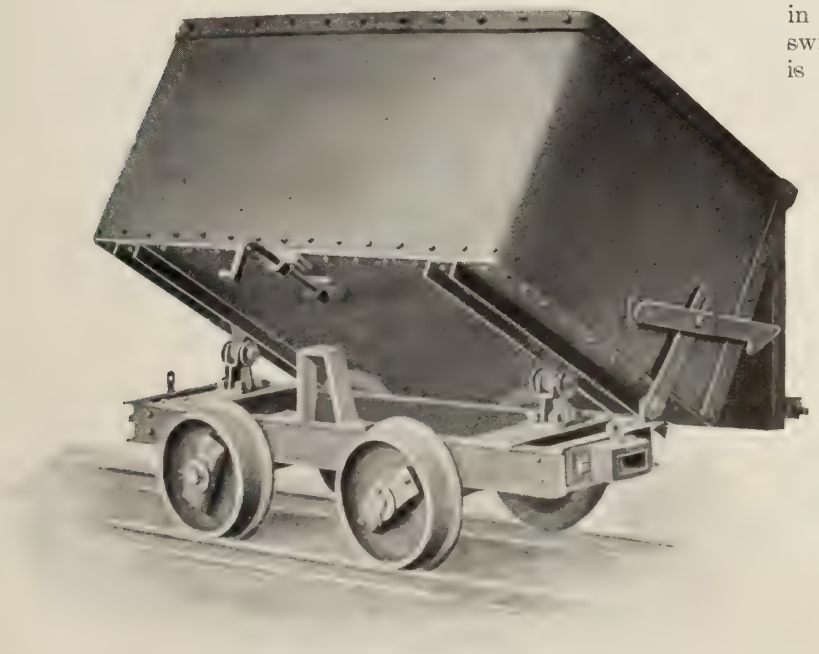
Code Word—Afghan.



ALL STEEL, ONE SIDE DUMP CARS.



ONE SIDE AUTOMATIC DUMP CAR—LOADING POSITION.



ONE SIDE AUTOMATIC DUMP CAR—DUMPED POSITION.

This car is especially adapted to mining or other purposes where rapid work is necessary. It is solidly built, using heavy plates for body, and channel steel as framework. Trunions are iron fitted into channels on bottom of dump box. Wheels are chilled, self-oiling type, 12 in. diameter. Brake or spring drawheads furnished when ordered. Built in capacities to suit requirements.

This car has an automatic device for opening hinged door. It is simple in construction and positive in action. As body swings over the catch is released and the weight of the load forces door open. When returned to upright position the automatic feature acts in a similar manner, locking door.

Standard Car.

Length over all, 4 ft. 11 in.

Width over all, 3 ft. 10 in.

Height, from rail to top of car, 3 ft. 1 in.

Gauge, inside to inside of rails, 24 in.

Capacity, 20 cubic ft.

Code Word—Agate.

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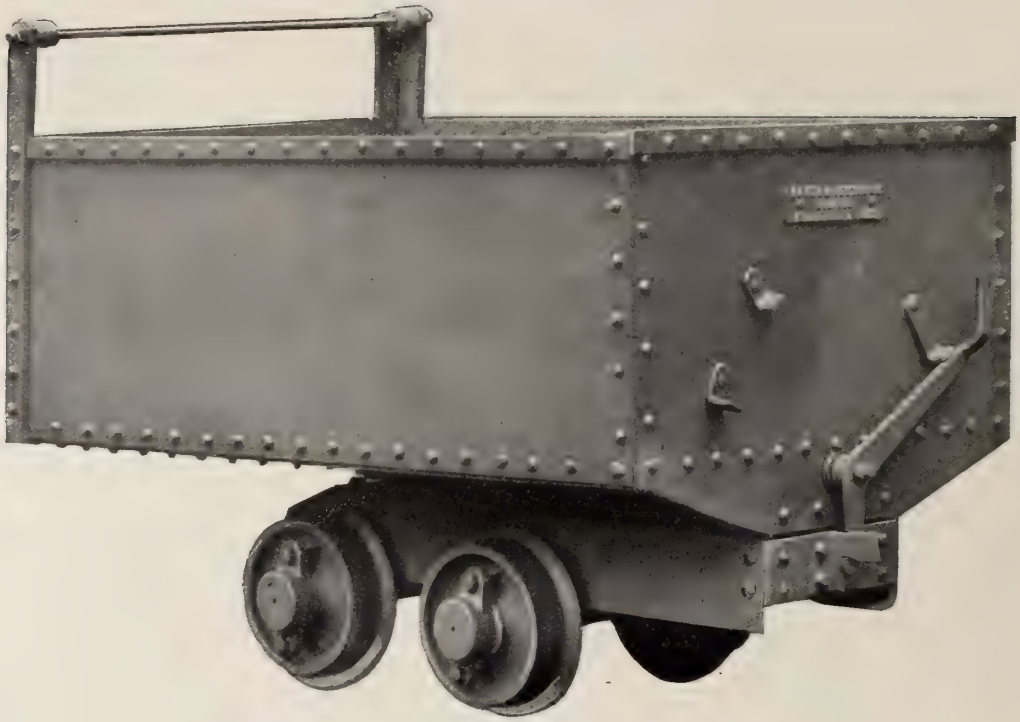
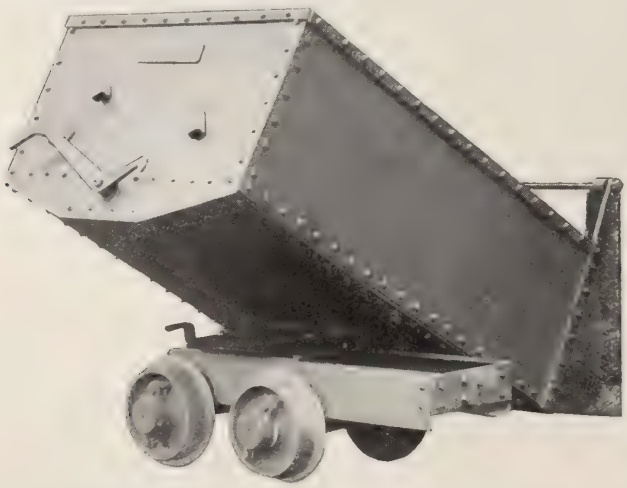
SALES AGENTS



ROTARY STEEL DUMP CARS.

This is one of the most popular and convenient styles of dump car ever devised. As will be seen by the illustrations on this page and the page opposite, the steel box is mounted on a turntable, so the operator can turn the box and dump it at the end or either side, as he may desire.

One lever controls the car. When the car is level this lever locks the box in place. By moving the lever to the next position the box may be revolved till the door is in the right place for dumping, then by moving the lever to the next position the door swings open and the contents of car are discharged. The car may be tipped either before or after opening the door, as may be desired.



The bottom of this car is lined with a false bottom of wood covered with 3-16 in. steel plate, which may be renewed as required This greatly prolongs the life of the car.

We will make these rotary steel dump cars with any size of box, or for any gauge of track, to suit the customer. On the opposite page we list a few of the commoner sizes, but will be pleased to figure on other sizes at any time.

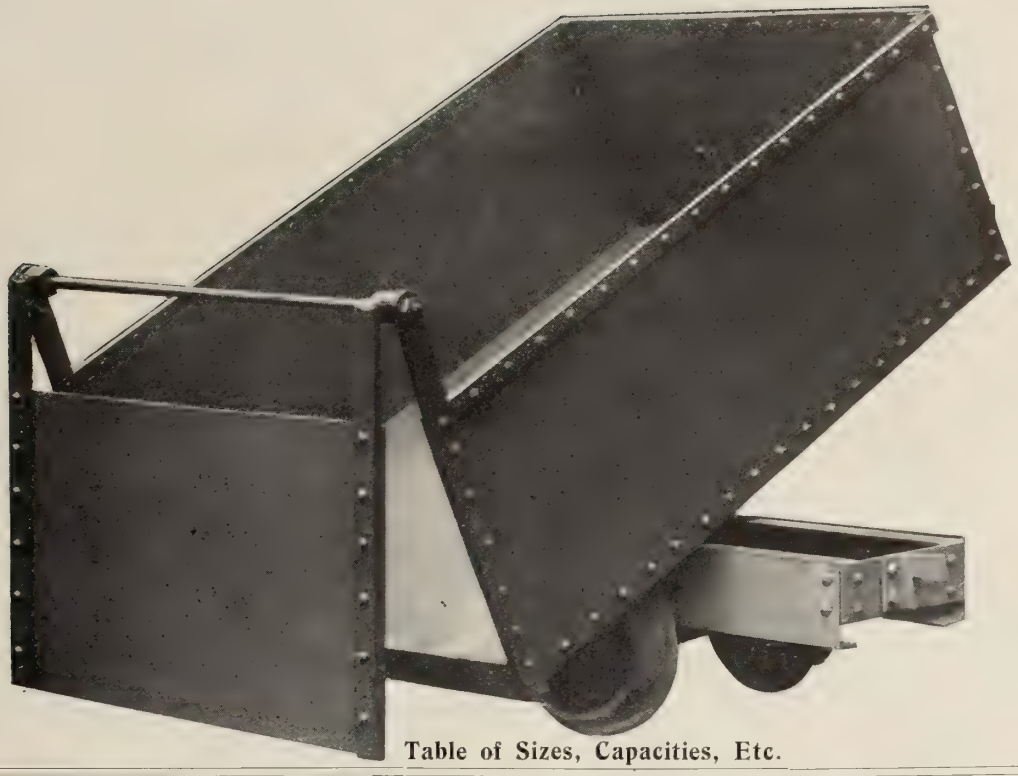


Table of Sizes, Capacities, Etc.

Capacity in Cubic Feet	Length in Inches	Width over all in Inches	Depth in Inches	Diam. of Wheels in Inches	Gauge of Track in Inches	Thickness of Steel in Side Nnmber	Thickness of Steel in Bottom	Approximate Weight of Car in Pounds	Code Word
13	44	29	22	10	18	10	¼	900	Argil
13	44	29	22	10	18	3/16	¼	975	Agendum
15	45	30	24	10	18	10	¼	950	Agenda
15	45	30	24	10	18	3 16	¼	1050	Aggressor
21	54	32	24	12	18	10	¼	1000	Agility
21	54	32	24	12	18	3 16	¼	1100	Agnostic
27	54	35	30	12	18	3 16	¼	1200	Agora
27	60	39	20	12	18	3 16	¼	1280	Agrarian

V-SHAPED DUMP OR TIP CARS.

This style of dump or tip car is very simple in construction and does not easily get out of order. It can be used successfully for conveying concrete, earth, sand, clay, stones, coal, or any other kind of material, wet or dry.

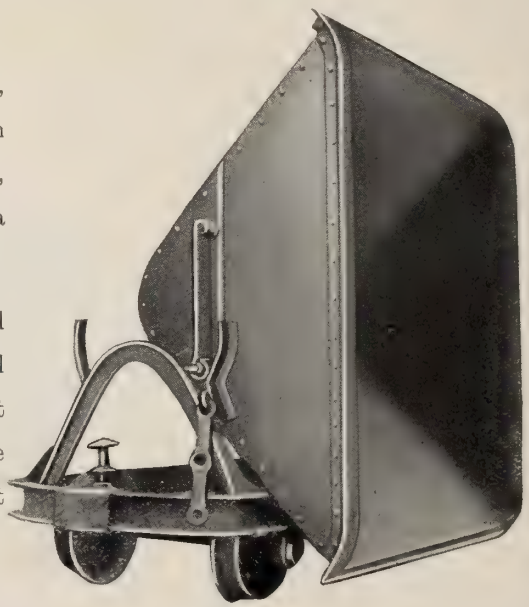
The dumping arrangement is positive and easily worked, none of the contents falling between the tracks. By means of this arrangement the box can be held in a slanting position for convenience in loading.

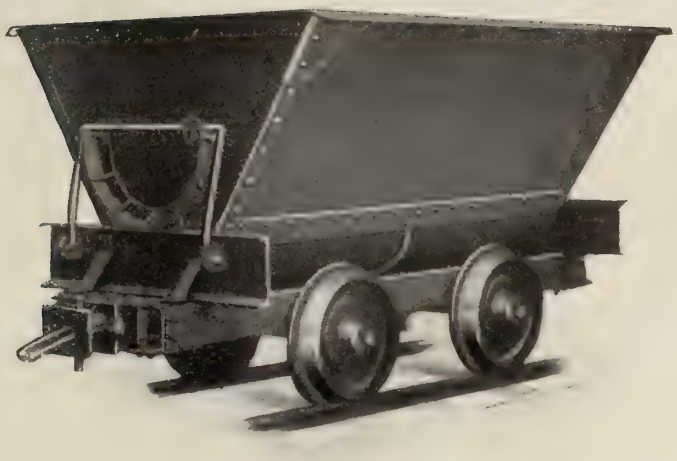
Table of Sizes, Capacities, Etc.

Capacity Cubic Feet	Gauge Inches	Diameter of Wheels Inches	Wheel Base Inches	Length over all	Breadth over all	Height from top of rail	Weight lbs.	Code Word
18	20	12	22	5′-7″	4′- 3″	3′- 4″	685	Aide
18	24	12	22	5′-7″	4′- 3″	3′- 6″	700	Ahoy
27	20	12	22	6′-2″	4′-10″	3′-10″	775	Aigret
27	24	12	22	6′-2″	4′-10″	3′-11″	790	Ailantus
36	24	14	26	6′-9″	4′-11″	4′- 2″	900	Aino
54	36	16	36	8′-2″	6′- 5″	5′- 0″	2000	Aisle

The framework and body are all steel, the wheels are chilled charcoal iron, with babbitted boxes. The whole construction, though light, is strong and designed for a maximum of wear.

We give above some of the standard sizes in which we make these cars, but will vary these dimensions, if necessary, to suit special work. We will also be glad to give estimates on any sizes or dimensions not listed above.





V-SHAPE ROCKER DUMP CARS

Will Dump at Either Side.

Of the many designs of V-Shape Dump Cars for carrying ore, or for general purpose work, this type has often demonstrated its superiority under all conditions of use. It is very simple and cannot easily get out of order.

The body is of the best grade of steel plate connected by angles. The rockers are steel or malleable iron, working on rocker supports of steel channel. These channels are of the requisite size to give a proper dumping angle, varying with the capacity and gauge of track.

This car is furnished with either round or square steel axles and either inside or outside bearings. The bearings are either plain, babbitt, brass or roller, as desired.

Chilled cast iron wheels will be furnished.

This car is provided with link and pin drawhead, securely attached to the end sills.

Built regularly for 18, 27 and 36 cu. ft. capacity and for 18 in. to 36 in. gauge.

We shall be glad to quote you upon receipt of information as to gauge of track, capacity wanted and material to be carried.

Capacity Cubic Feet	Gauge of Track	Overall Dimensions			Code Word
		Length	Width	Height	
18	18 in. to 24 in.	80 in.	44 in.	40 in.	Alacrity
27	24 in. to 30 in.	86 in.	52 in.	43 in.	Albatross
36	24 in. to 36 in.	90 in.	58 in.	46 in.	Albino

If your requirements are special and none of the types illustrated are suitable, we solicit your specifications, from which we shall gladly draw up a special design. Our facilities for special work are the best and we are thus enabled to quote very low prices and to make prompt delivery.

OVAL HOPPER SIDE-DUMPING TIP CAR.

Dumps Either Side.

This car is designed for conveying coal and other bulky material on wharf trestles, etc.

The hopper is made of steel, bound on top with a heavy wrought iron band.

On the ends a single pin trunnion is fixed, which constitutes a support and bearings for the hopper to rock from side to side. It is held in an upright position by a lever catch which is fastened to the truck and bottom of hopper. When the catch is released the load will dump on either side of the track, at the will of the operator, and return to its former upright position automatically.

The stands and socket bearings are made of wrought iron.

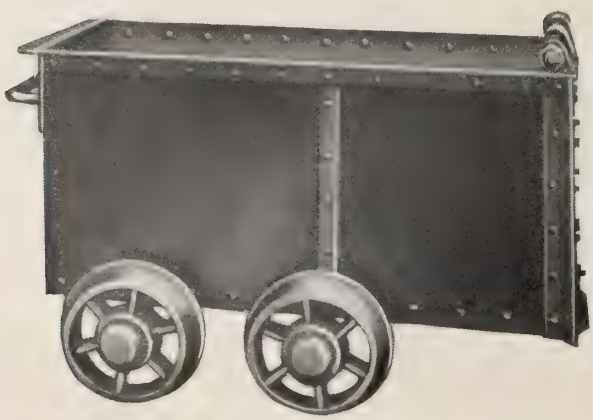
The truck is made of oak wood, or steel as desired.

The axles are made of machinery steel, and turn in babbitted metal bearings.

The standard sizes are tabulated below. For cars of a greater or less capacity and of varying dimensions, estimates will be furnished on request.

Table of Sizes, Capacities, Etc.

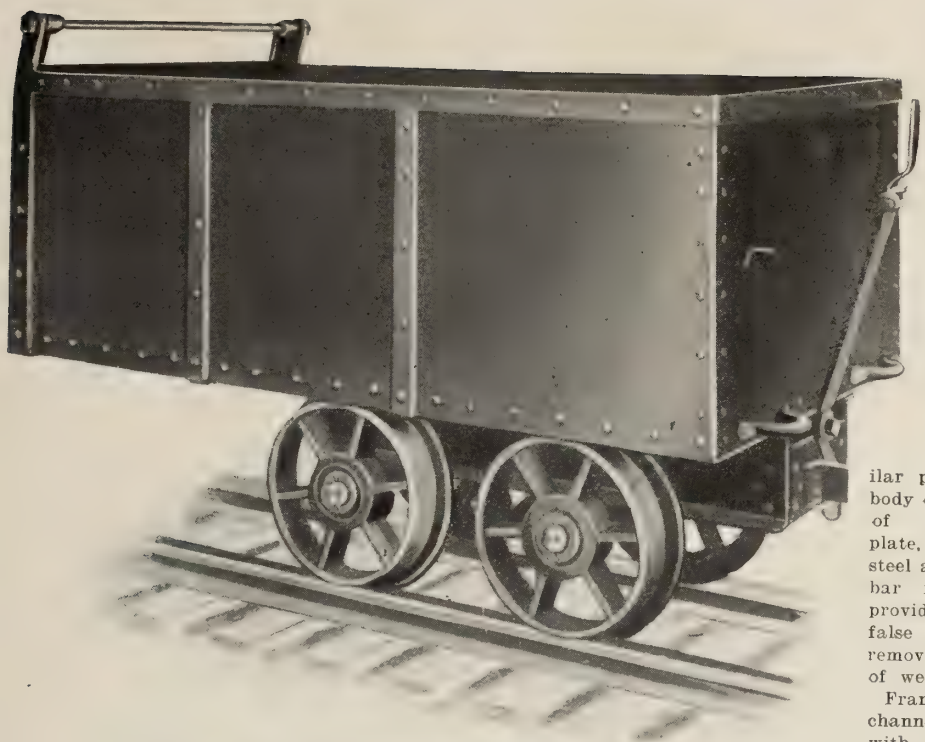
Capacity in Cubic Feet	Coal Capacity in lbs.	Height of Car in Inches	Height of Car when Dumping in Inches	Extreme Length in Inches	Width of Car in Inches	Diam. of Wheels in Inches	Wheel Base	Code Word
22	1120	50	63	80	50	14	30	Album
33	1650	59	74	88	58	16	36	Albumen
45	2240	62	75	90	61	18	36	Albumenoid
67	3360	64	84	94	69	20	48	Adhesive
89	4480	68	93	112	80	23	54	Alcade



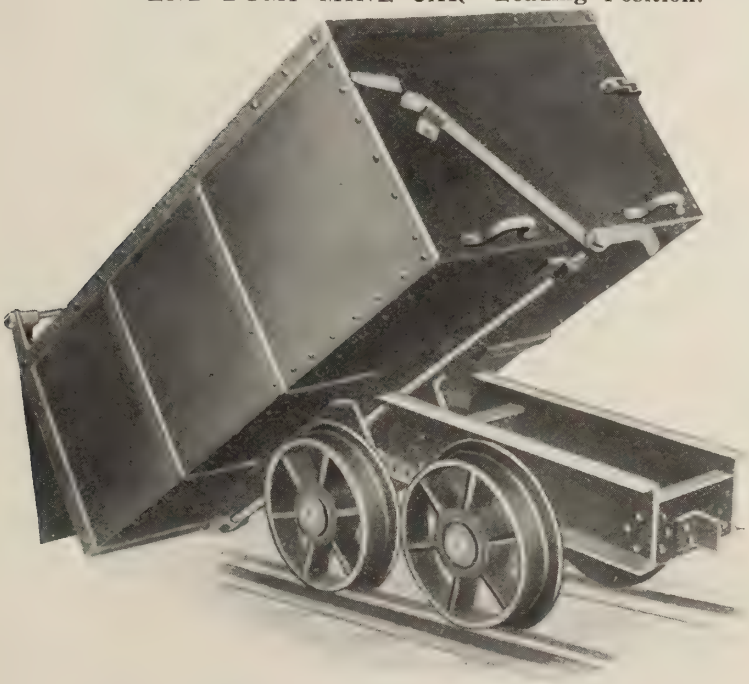
END DUMP STEEL MINE CAR.

Has Best Chilled Self-Oiling Wheels.
DIMENSIONS, CAPACITIES, ETC.
Made of heavy steel plate. Wheels 12 inches in diameter.

Length	Width	Depth	Capacity	Weight	Gauge	Code Word
INS.	INS.	INS.	CU. FT	LBS.	INS.	
36	18	20	7	425	22	Alchemy
40	20	20	9	500	24	Alchemist
42	20	24	11	650	24	Alcove
44	24	24	14	750	28	Ale
48	24	24	16	850	28	Alehouse
48	24	28	18	900	28	Alfalfa
54	28	28	21	1,050	32	Algebra
60	30	28	28	1,150	34	Algonquin
66	30	30	35	1,300	34	Alias
72	30	30	40	1,450	34	Alibi



END DUMP MINE CAR—Loading Position.



END DUMP MINE CAR—Dumped Position.

This cut represents an end dump mine or ore car, designed to dump very low to the track. Owing to its peculiar construction the use of a tipple is unnecessary.

This car is somewhat heavier than our standard rotary mine cars, but is used for similar purposes. The body of car consists of heavy steel plate, reinforced by steel angles and flat bar iron, and is provided with a false bottom plate, removable in case of wear.

Frame is heavy channel steel, fitted with 16 in. chilled, self-oiling wheels, these wheels being practically indestructable.

The frame of this car is made in two sections, hinged as shown in cut, the forward part being riveted to bottom plate of car. As catch is released the body of car assumes a sharp angle, bringing the end of car directly to the track or upon a block arranged for that purpose. The lever at the end of car operates the locking device and the door latch simultaneously.

This car can be built in capacities ranging from 16 to 40 cubic ft., and made for 18 in. to 24 in. track gauge.

STANDARD CAR.

Length over all, 6 ft. 4 in.
Width over all, 3 ft. 5 in.
Height, from rail to top of car, 4 ft. 3 in.
Gauge, inside to inside of rails, 24 in.
Capacity, 40 cubic feet.
Code Word, Alien.

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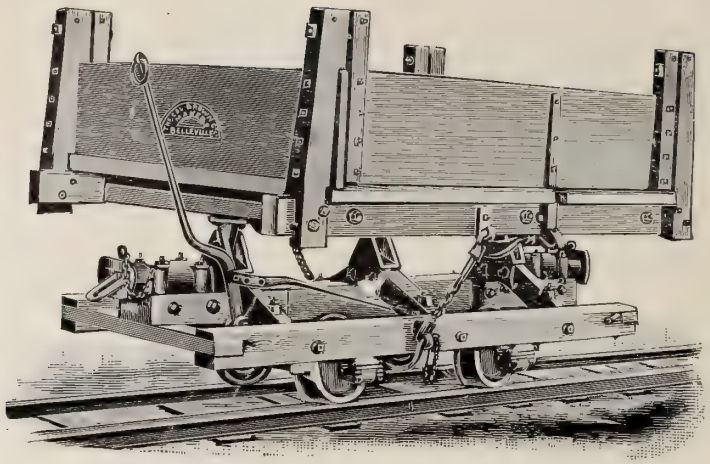


"PETELOR" DUMP CAR IN LOADING POSITION.

"PETELOR" DUMP CARS.

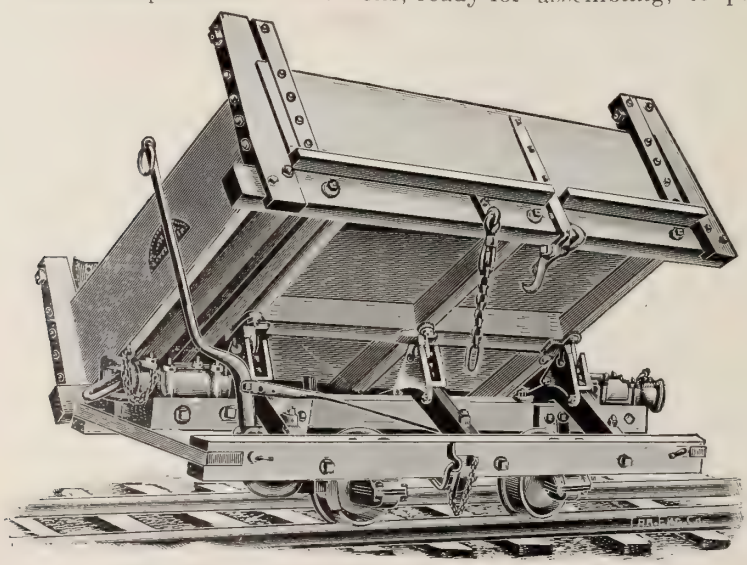
For Carrying Sand, Gravel, etc., for Railway Construction Work. Dump on either side.

This is one of the most popular styles of Side-Dump Cars on the market. It dumps to either side, has an automatic door latch, and is also provided with a brake. As these cars are usually run in trains, it is customary to provide the brake on only one car in every six or seven.

We make this Dump Car with a capacity of one cubic yard, and for an 18 inch gauge track. We also make it with a capacity of one cubic yard and a half, and for a 24 in. gauge track.

We have made hundreds of these cars for various contractors, and they have invariably given satisfaction.

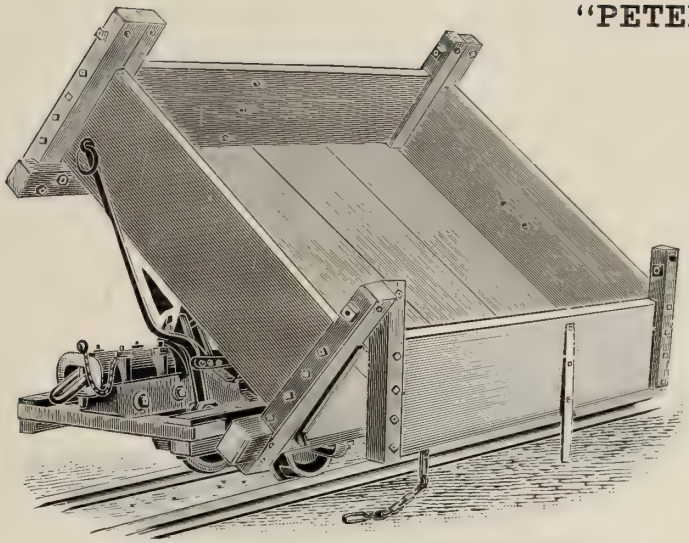
Although we usually build these cars complete in our own shops, we will, if desired, furnish complete sets of the irons, ready for assembling, to parties who wish to furnish their own wood work, and assemble the cars themselves.



"PETELOR" DUMP CAR IN DUMPED POSITION.

Cars have chilled wheels, made of best charcoal iron, have spring bar draw heads at each end, have brass bearing, cellar-oiling boxes. The Car Boxes are made of good oak or elm, and are well stayed by bolts and forgings, making a strong, durable and reliable box. These cars, as made by us, have proven their worth on many railway sections.

"PETELOR" DUMP CARS.



"PETELOR" DUMP CAR—IN DUMPED POSITION.

Of late years many shrewd railway contractors are finding it to their advantage to purchase the iron work for these cars from us, and to build their own cars from local timbers. For this purpose we supply complete sets of all iron parts, including forgings, large and small, chains, bolts, etc., or we will supply any portion of these irons that may be desired. Many contractors can produce the forgings for these cars in their own blacksmith shops. In this case we supply the other iron work, which includes the wheels and axles, and boxes with brass bearings, also the rocker castings and drawheads complete.

	Diameter of Wheels	Gauge of Track	Approximate Shipping Weight	Code Word
One Yard Car complete, as shown	12 in.	18 in.	1500 lbs.	Alimony
Wheels, Axles and Boxes only, per car			400 "	Alkali
Rocker Castings only, per car			70 "	Alkaloid
Forgings, Bolts and Chains, per car			100 "	Allegory
Drawheads, with Spring, etc., complete, per car			70 "	Allegro
One and one-half Yard Car complete, as shown	14 in.	24 in.	2500 "	Alliance
Wheels, Axles and Boxes only, per car			550 "	Alligator
Rocker Castings only, per car			120 "	Allopathy
Forgings, Bolts and Chains, per car			140 "	Alloy
Drawheads, with Spring, etc., complete, per car			100 "	Allspice

Memorandum of Conditions and Requirements of Service.

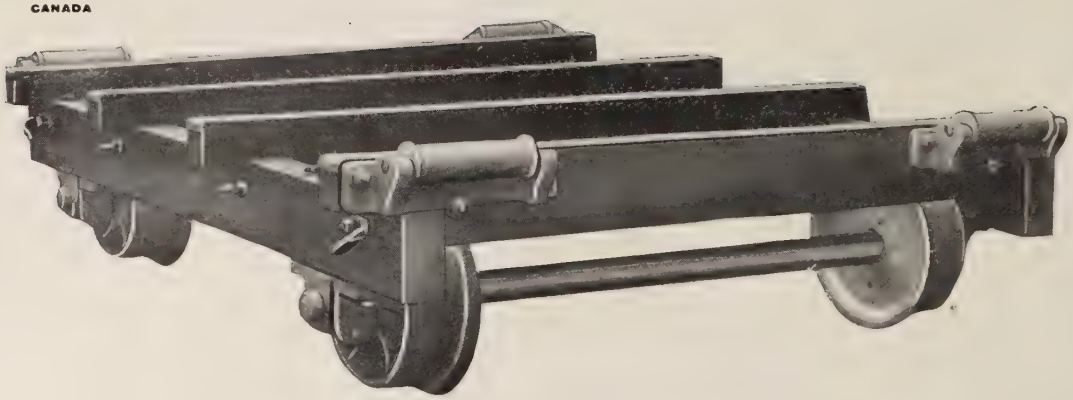
To be Furnished by Prospective Purchasers of Cars.

(1) Style of car.
(2) Approximate number of cars required.
(3) Gauge of track, inside to inside of rails, if track is laid or provision made for same.
(4) Cubical contents.
(5) Kind of material to be handled and weight per cubic foot.
(6) State whether cars are to be handled singly or in trains, and by tractive power or other means of propulsion.
(7) Limitations if any in height or width. If so give complete dimensions of car over all.
(8) Radius of sharpest curve.
(9) If practical a brief description of car, giving diameter of wheels and any preference with respect to design or details.
(10) Whether brake is to be furnished, stating whether foot or hand brake is preferred.

DOUBLE FLANGED WHEELS.

With Short Axles and Two Babbitted Boxes.
For Travelling Derrick cars and other heavy duty cars.

Diameter of Wheels at Tread	12 in.	14 in.	16 in.	18 in.	20 in.	24 in.
Approximate Shipping Weight per set, as illustrated	180 lbs.	225 lbs.	300 lbs.	375 lbs.	460 lbs.	575 lbs.
Code Word	Andidote	Antipathy	Antipodes	Antiquary	Antiquity	Antler



RAILWAY CONSTRUCTION CARS.

For Carrying Rails and other Construction Equipment. Capacity 12 Tons.

The sills of this car are protected on the top by an iron sheathing, and 12 in. rollers are provided at each corner for sliding the rails on.

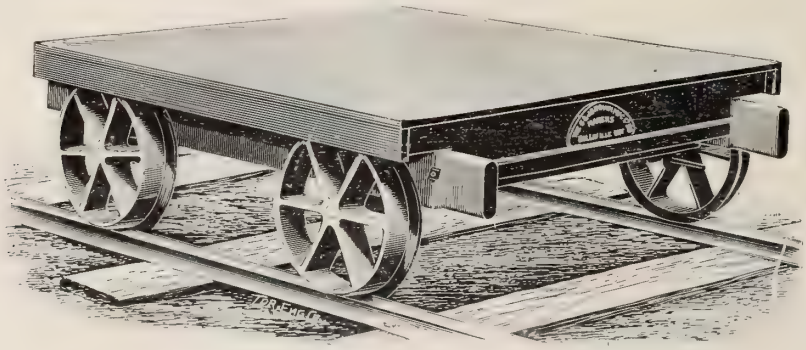
The wheels of this car are made with a double width tread, so the car can be run ahead on the rails as they are laid down and before they are spiked in place.

We make this car complete, if desired, or furnish all the iron parts ready for assembling to those who wish to supply their own woodwork. Made to fit any gauge of track.

Our standard size of this car is built for railway gauge track, has sixteen inch wheels on three inch axles, and weighs complete 1900 pounds.

Code Word for Complete Car, "Cabbage."

Code Word for Irons only, "Cabin."



PUSH CARS.

A good general purpose car, for use in railway construction, quarrying or mining work, or, in short, for almost any kind of work. A strong, well-built car, made to fit any gauge of track desired.

We make this car complete, if desired, or furnish all the iron parts ready for assembling to those who wish to supply their own woodwork.

Standard Car, made for Standard Railway gauge track, and fitted with 16 in. wheels.

Code Word for Complete Car, "Cabinet."

Code Word for Irons only, "Cabman."

Car Irons

CAR WHEELS, AXLES, AND BOXES.

As most of this railway construction work and mining and quarrying work is done in localities where lumber is plentiful, the contractor will find a great saving effected in the cost of his cars by buying the iron work from us, and furnishing his own wood work.

We have shipped hundreds of sets of car irons to customers in this way, and are proud to say that our customers are so well pleased with the quality of the irons we have been supplying that many of them are buying from us regularly, year after year, as they go from one contract to another.

On the next page we list a few of the standard sets of Car Irons which we supply regularly to many of our customers. We also make many styles not listed, but on which we will be pleased to give prices and specifications at any time. We have a large assortment of patterns of Wheels in all sizes and weights up to twenty-four inches in diameter. We have also patterns for a great many designs of axle boxes or grease boxes, and can make up sets of car irons to suit almost every demand.

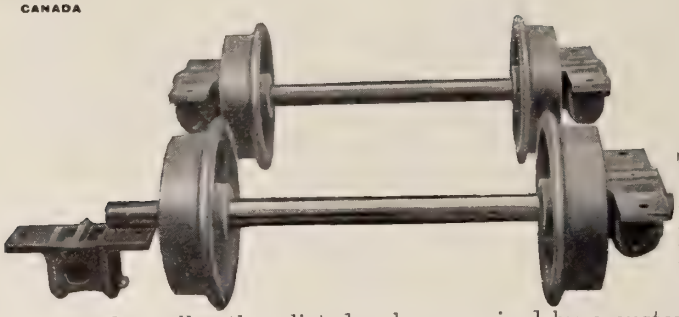
Our car wheels are made from the best mixture of charcoal and soft pig irons that we can procure for the purpose, and we guarantee their durability in hard service.

CAR WHEELS—Chilled or Unchilled. With Solid Web.

We are prepared to furnish these to order, any diameter or any weight required, and to fit any size axle. We can also furnish axles for the wheels, as shown above, and on the next page, together with axle boxes of any pattern required.

CAR WHEELS—Unchilled, with Spoke Centre.

We are prepared to furnish these to order, any diameter or any weight required, and to fit any size axle.



CAR TRUCKS.

With Babbitted Boxes.

We supply these car trucks in a great variety of sizes, as shown by the list below. This list gives the diameters of wheels and axles most commonly used, but, as may be seen by the illustration on the preceding page, we manufacture sizes both larger and smaller than listed, when required by a customer.

Code Word for Trucks as shown, with axle boxes outside of wheels, "Apiary."

Code Word for same Car Trucks, with alxe boxes inside of wheels, "Appetite."

This illustration shows the axle boxes placed outside of the wheels, where most of our customers demand them. There are many cases, however, where it is necessary to put these boxes inside of the wheels, so we list them both ways, the price being the same in either case. The cap of this axle box is recessed to contain oily waste for lubricating the axles.

We also manufacture these car trucks without the boxes, but with either plain or self-oiling wheels turning on square axles, as illustrated on this and the opposite page. The schedule below covers all these styes, as explained on the page opposite this.

Schedule of Sizes, Weights and Code Words.

Of all styles of Car Trucks illustrated on these two pages.

	12 inch Wheels	14 inch Wheels	16 inch Wheels	18 inch Wheels	20 inch Wheels	24 inch Wheels
2 inch Axles—						
Shipping Weight	375 to 430	560 to 610	720 to 770	800 to 850	975 to 1020	1150 to 1200
Code Word	Alluvion	Alnamac	Almond	Almoner	Alms	Almshouse
2½ inch Axles—						
Shipping Weight	440 to 580	590 to 710	770 to 860	850 to 940	1000 to 1120	1200 to 1300
Code Word	Aloe	Alpaca	Alpenstock	Alpha	Alphabet	Alto
3 inch Axles—						
Shipping Weight	510 to 680	680 to 860	830 to 1000	940 to 1050	1100 to 1270	1275 to 1450
Code Word	Altruism	Alum	Alumnus	Amalgam	Amarinth	Amanuensis
3½ inch Axles—						
Shipping Weight	690 to 860	860 to 1030	1000 to 1180	1090 to 1260	1270 to 1440	1450 to 1620
Code Word	Amarylis	Amateur	Amatory	Amazon	Ambassador	Ambergris

ROCKER OR DUMPING IRONS

One of our most popular sizes in the Car Trucks illustrated above has fourteen inch wheels on thirty or thirty-six inch gauge axles. We have sold hundreds of sets of these trucks to railway contractors for building small dump cars for handling ballast or excavated material. For this purpose we have deivsed the small Rocker Castings shown above, and they have become deservedly popular for this class of work. They are light, simple, and strong, and with them the car can be dumped to either side.

Code Word for set, as shown, "Ambush."

SELF-OILING CAR WHEELS

With Webbed Centre.

This type is quite generally used on Mine Cars and is very satisfactory. Wheels are of chilled cast iron, 10 in. or 12 in. in diameter, turning on square axles and secured on the axle by a washer and cotter. A cast iron cap fits over the end of the axle and is fastened to the wheel by two bolts. This cap serves the double purpose of excluding dust and retaining the lubricant, which in the form of grease is placed in the cap.

Code Word for Wheel only, "Ambrosia."

Code Word for set of two square axles with four of these wheels, "Amble."

Code Word for same set with ordinary wheels, as shown at top of page, "Ambulance."

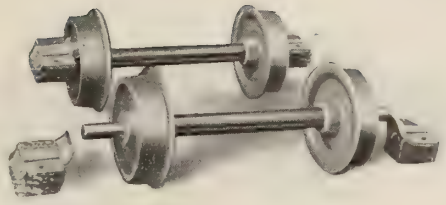
CAR TRUCKS.

WITH BRASS BEARING AXLE BOXES.

This is the style of truck supplied with the 'Petelor' Side Dump Cars illustrated on pages 122 and 123. It is also used extensively on other types of small cars. The brass bearing ensures long wear, with proper lubrication. The cap of the box is recessed to contain oily waste for lubrication purposes. The top of the box projects over the hub of the wheel to exclude dirt.

We make these Car Trucks in a variety of sizes, as listed on the opposite page.

Code Word, "Ambuscade."



TELEGRAPHIC CODE LIST FOR VARIOUS GAUGES OF TRACK.

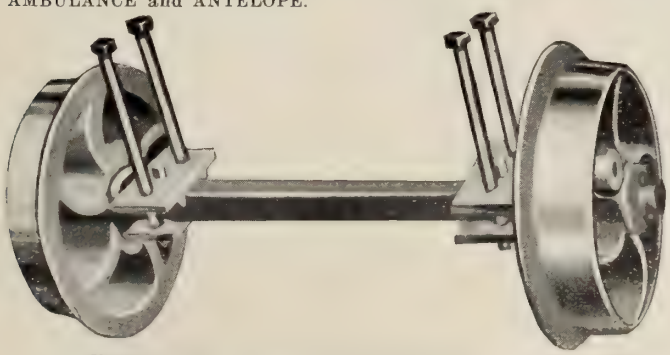
(ALL SIZES ARE IN INCHES)

18 Amethyst .	26 Ammonite.	34 Anaconda	42 Anchorage.	50 Anemone
20 Amenity	28 Amphibion.	36 Anatomy.	44 Anchovy.	52 Aneroid.
22 Amity	30 Amulet.	38 Analogy.	46 Andiron.	54 Angler.
24 Ammonia.	32 Amusement.	40 Ancestor.	48 Anecdote.	56½ Aniseed

EXPLANATION OF USE OF TELEGRAPHIC CODE WORDS WHEN ORDERING THESE CAR TRUCKS.

Owing to the almost endless number of combinations of sets demanded by the use of various diameters of wheels and axles, the many lengths of axles necessary for the multiplicity of gauges of track actually in use, the different styles of axle boxes, etc., it has been impossible to assign one definite code word for any one set of trucks. We have therefore devised the system shown on these two pages, by the use of which any combination of these wheels, axles, boxes and gauges may be expressed by **three telegraphic code words.**

For instance, a telegram reading "Please quote best price and earliest shipping date of six sets of sixteen inch wheels on three inch axles, thirty-six gauge track, with babbitted boxes, also with brass bearing boxes and six sets of rocker dumping irons." By the use of the code words this long telegram of thirty-seven words would be condensed to ten words, as follows: "SAXON SIX ALUMNUS ANATOMY APIARY ALSO AMBUSCADE and SIX AMBUSH. An examination of these ten words will explain the system better than many words here. Another sample telegram would be, "Please quote best price and earliest shipping date of six sets of car trucks with sixteen inch self-oiling wheels on three inch square axles, thirty-six gauge track. Also quote on same wheels not self-oiling, both webbed and spoked." This forty-one word message would be reduced to nine words, as follows: "SAXON SIX ALUMNUS ANATOMY AMBLE ALSO AMBULANCE and ANTELOPE.



SPOKED CAR WHEELS

With Square Axles, for Small Cars, for Light Work.

We make these spoked car wheels all diameters and for all the various sizes of axles and gauges of track as listed above, and on the page opposite. We also make the wheels, if desired, with the self-oiling device shown on the opposite page.

Code Word for wheel only, "Annuity."

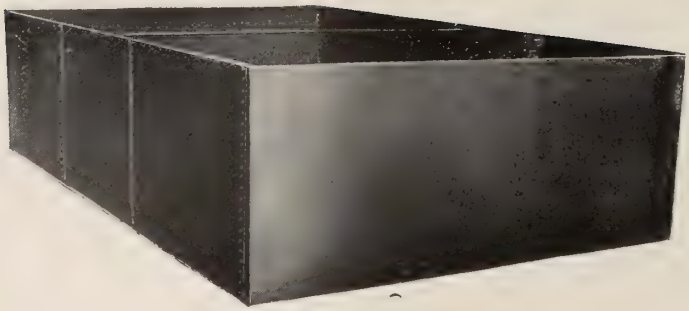
Code Word for set of two square axles, with four of these wheels and with bolts, plates, etc., not self-oiling, "Antelope."

Code Word for same set with self-oiling wheels, "Anteroom."

"Petelor" Rocker Castings or Dumping Irons.

These are the Rocker Castings used on the small "Petelor" Style Dump Cars shown on pages 122 and 123. The three pairs make up the one set as used on car.

Code Word per set, "Antic."



STEEL TANKS.

We make Steel Tanks all shapes and dimensions, and for all purposes. We make them round, square or oblong, or unusual designs, and open top or closed, and to resist any required pressure. It is impossible to list them all here, but we will be pleased to quote on any specifications, either standard or unusual.

AIR RECEIVERS.

Sizes suitable for air compressors of medium and large capacity. For working air pressures not exceeding 110 pounds per square inch.

Made of best 60,000 pounds tensile-strength steel; side seams double riveted; strongly braced and stayed, and tested up to 165 pounds water pressure, warranted safe and tight under 110 pounds working pressure. Fixtures include safety valve, pressure gauge, drain cocks, and flanges for inlet and discharge pipes.

Code Word	Diameter inches	Height Feet	Thickness of Shell Inches	Thickness of Heads Inches	Approximate Weight Pounds	Diameter of Safety Valves Inches
Rabbit . . .	30	6	$\frac{1}{4}$	$\frac{5}{16}$	700	$1\frac{1}{2}$
Rabble . . .	36	6	$\frac{1}{4}$	$\frac{3}{8}$	1000	$1\frac{1}{2}$
Raccoon . .	36	8	$\frac{1}{4}$	$\frac{3}{8}$	1200	$1\frac{1}{2}$
Racket . . .	42	8	$\frac{1}{4}$	$\frac{3}{8}$	1600	2
Radish . . .	42	10	$\frac{1}{4}$	$\frac{3}{8}$	1900	2
Raffle	48	12	$\frac{5}{16}$	$\frac{7}{16}$	3000	$2\frac{1}{2}$
Ragout . . .	54	12	$\frac{5}{16}$	$\frac{7}{16}$	3400	$2\frac{1}{2}$

The above size of receivers can be furnished to rest vertically or horizontally, as may be preferred, and will be constructed with connection and fittings arranged in any manner desired.

Special prices upon air receivers for higher pressures will be quoted upon application.

STORAGE TANKS.

For Storing Oils, Gasoline, or any other liquids

We manufacture these storage tanks any capacity and any dimensions to suit the customer. No job of this nature is too large or too small to receive our prompt attention. We build these tanks with dished heads as shown, or with flat heads. We build them to lie down, as illustrated, or to stand upright, and we make them to resist any required pressure. Let us figure on your requirements.

LARD RENDERING TANKS.

This is only one of the many special forms of tanks that we manufacture. We have made these for some of the largest packing concerns, and in several sizes, which we have not space to list here.

We manufacture all styles of special tanks for special purposes. We make them either steam jacketted or with single walls, also with steam coils, if desired. Send us your specifications, and allow us to tender.

A PARTIAL LIST OF SOME OF THE STEEL TANKS WE HAVE MANUFACTURED.

Plating Tanks, Gasoline Tanks.
Oil Storage, Oil Refining Tanks.
Blast Furnace Shells.
Cement Mill Clinker Bins.
Saw Tempering Tanks.
Whey Tanks, Water Tanks.
Street Sprinkler Tanks.
Cooling Tanks for Canning Factories
Stave Steaming Tanks for Cooperage Mills.
Steam Drums.
Lard Rendering Tanks.
Compressed Air Tanks.
Tumbling Barrels, wet and dry.
Boiler or Furnace Tanks for damp cellars.
Car Oil Tanks, Hot Water Tanks.
Boot Tanks for Elevators.
Cooking Tanks, Steam Jacketed Tanks.
Scale Hoppers or Bins.
Cement Storage Bins.
Retort Shells.

UPRIGHT BOILERS.

Our Upright Boilers are made of the best quality of Boiler Steel Plate, thoroughly guaranteed by the makers. All the vertical seams are double rivetted, and the circular seams single rivetted.

All of our upright boilers are provided with eight hand-holes for cleaning the boiler, four at the bottom of the water leg, and four at the level of the bottom tube sheet.

The tubes are placed symetrically, with a continuous clear space between them, and two wider spaces of 1½ inches or more in width crossing the tube section at right angles by means of which the tubes and tube sheets may be readily cleaned.

We make these boilers in two styles, as shown, with cast iron base, and with shell extended to form a base Unless otherwise specified we will ship boilers with extended shell, as we carry these in stock and can therefore give quicker delivery.

"WESTERN" BOILERS.

A full dscription of our upright boilers is given on pages 6 and 7 of this catalogue, and it will be noted there that we have designed special boilers to suit the Provincial laws of the Western Provinces. We give below specifications of these "Western" boilers, from which it will be seen they are built slightly heavier, and are consequently more expensive.

Unless otherwise instructed we will ship these "Western" Boilers also with extended shell.

The fittings for all of the above boilers, as regularly supplied, are:—Base (if desired), Steam Gauge, Safety Valve, Grates, Water Gauge, Blow-off Valve, Short Stack, Gauge or Try Cocks, Injector and Injector Valves and Piping.

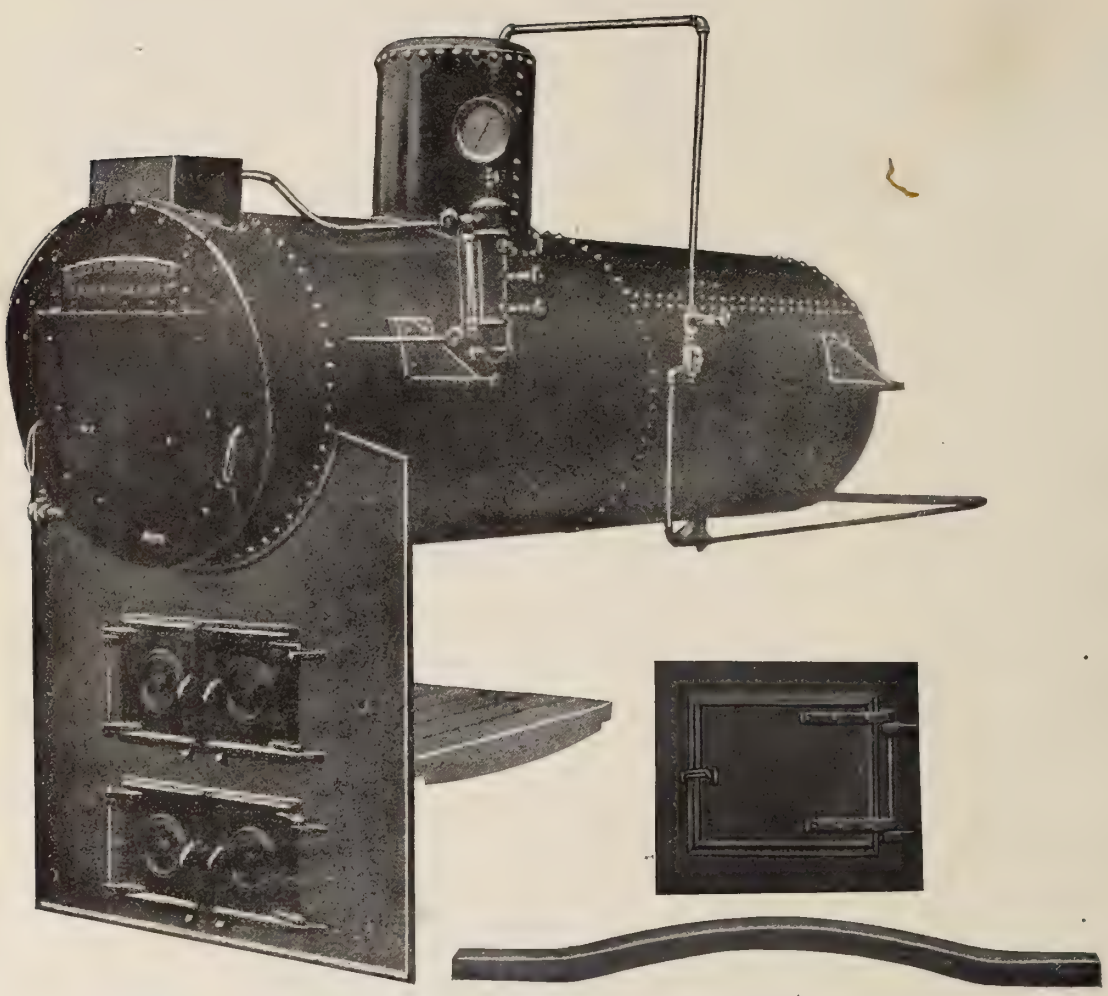
Specifications of Standard Vertical Boilers

With Full Length Tubes.

Horse Power, Approximate	5	6	10	11	14	17	22	26	40
Diameter .... in inches	26	30	33	34	37	40	44	48	54
Height, over all .... "	60	66	84	72	90	90	96	102	114
Ht. from bottom of Water Leg "	54	60	78	66	84	84	90	96	108
Number of 2 inch Tubes	34	42	60	72	72	88	100	124	154
Length of Tubes ... in inches	36	36	48	42	54	54	60	60	72
Heating Surface of Tubes..in sq. ft.	48	60	114	119	154	188	237	294	438
Total Heating Surface .... "	56	72	126	132	162	204	258	316	480
Thickness of Shell ... in inches	¼	¼	¼	¼	¼	¼	¼	¼	5/16
Thickness of Heads .... "	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8
Thickness of Furnace Shell . "	¼	¼	5/16	¼	5/16	5/16	5/16	5/16	5/16
Diameter of Stack .... "	7	9	12	13	13	14	16	18	20
Length of Stack, including cone "	46	48	78	48	78	78	78	78	78
Approx. Weight, in lbs., of Boiler and Fittings	1200	1500	2100	2000	2600	3000	3500	4400	6000
Code for Boiler with extended shell	Rain	Rainbow	Rainfall	Raisin	Rajah	Ramp	Romper	Ransom	Rapier
Code for Boiler with cast iron base	Rapture	Rarity	Rarebit	Rattan	Raven	Ravine	Razor	Reagent	Realm

Specifications of "Western" Vertical Boilers With Full Length Tubes.

Horse Power, Approximate	5	6	10	11	14	17	22	26	40
Diameter ... in inches	26	30	33	34	37	40	44	48	54
Height over all .... "	60	66	84	72	90	90	96	102	114
Ht. from bottom of Water Leg "	54	60	78	66	84	84	90	96	108
Number of 2 inch Tubes	34	42	60	72	72	88	100	124	154
Length of Tubes .... in inches	36	36	48	42	54	54	60	60	72
Heating Surface of Tubes, in sq. ft.	48	60	114	119	154	188	237	294	438
Total Heating Surface .... "	56	72	126	132	162	204	258	316	480
Thickness of Shell ... in inches	¼	¼	¼	9/32	9/32	5/16	5/16	5/16	3/8
Thickness of Heads .... "	3/8	3/8	5/16	3/8	3/8	3/8	3/8	3/8	7/16
Thickness of Furnace Shell. "	5/16	5/16	5/16	5/16	5/16	11/32	11/32	11/32	3/8
Diameter of Stack .... "	7	9	12	13	13	14	16	18	20
Length of Stack, including Cone "	46	48	78	48	78	78	78	78	78
Approx. Weight, in lbs,. of Boiler and Fittings....	1270	1580	2100	2120	2750	3100	3870	4800	7200
Code for Boiler with extended shell	Realty	Ream	Rebel	Rebuff	Rebus	Recipe	Recoup	Recruit	Rector
Code for Boiler with cast iron base	Redcoat	Redskin	Redwing	Reeve	Referee	Refrain	Refuge	Regal	Regatta



RETURN TUBULAR BOILERS.

With Dome and Smoke-box Extension.

We have a reputation for making good boilers, and we aim to live up to that reputation. Our Boilers are made with modern tools, specially designed for the purpose, ensuring good workmanship. They are made of the best material, made specially for the manufacture of boilers. They are well made, and are thoroughly tested before shipment, and we guarantee them to be sound and in every way suitable for the working pressure for which they are designed.

The width of the grate surface in all cases equals the diameter of the boiler. Our grates are well proportioned, and are heavy enough to ensure long service, with proper care, that is, by keeping the ashes away from the bottom of the bars.

Regular Fixtures supplied with Half Front Boilers, as illustrated above.

Cast Iron Half Front, with fire and ash-pit doors and fire door liners, heavy dead plate, grate bars and grate bar bearers, rear arch bars for supporting the brickwork, rear ash door and frame, safety valve, steam gauge with cock and syphon, water column fitted to boiler and with water gauge and try cocks or gauge cocks, blow-off valve, also injector with globe valve, check valve, stop cock and injector piping, all as shown in the illustration above.

Anything called for and not in the above list will be charged as an extra.

A smokestack is always charged as an extra.

Buckstays or wall plates and rollers, binding bars and rods, and anchor bolts are all subject to order, and are charged extra.

Specifications of Small Return Tubular Boilers.

With Dome, Smokebox Extension, Half-Front, Etc.

Horse Power, as usually rated	7	8	9	9	10	12	13½	16	18	20	23	25	27	24	27	30	33	36	39	42
Diameter of Boiler ....in inches	26	26	26	30	30	30	30	36	36	36	36	36	36	42	42	42	42	42	42	42
Length of tubes....in feet	5	6	7	6	7	7	8	7	8	9	10	11	12	8	9	10	11	12	13	14
Number of 3 inch Tubes	15	15	15	16	16	20	20	28	28	28	28	28	28	38	38	38	38	38	38	38
Square feet of heating surface	80	95	110	104	120	142	162	194	221	247	274	301	327	292	328	363	398	434	469	504
Length of Grate * ....in inches	30	30	30	30	30	30	30	30	30	36	36	42	42	36	36	42	42	42	48	54
Diameter of Dome .... "	13	13	15	15	15	15	15	18	18	18	18	18	18	20	20	20	20	20	20	22
Height of Dome .... "	18	18	18	18	18	18	18	22	22	22	22	22	22	24	24	24	24	24	24	24
Thickness of Shell .... "	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Thickness of Main Heads.... "	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of Dome Shell "	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Thickness of Dome Head.... "	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Diameter, in inches, of Smokestack recommended	13	13	13	15	15	15	15	18	18	18	18	18	18	22	22	22	22	22	22	22
Length, in feet, of Smokestack recommended	28	28	28	28	28	28	28	28	28	35	35	35	35	35	35	35	40	40	50	50
Weight of Boiler and Britchen, in pounds	1075	1230	1395	1450	1530	1620	1700	2150	2350	2550	2760	2960	3160	2900	3150	3400	3650	3900	4200	4500
Weight of Half Front, Grates and other Fittings....in pounds	580	580	580	1050	1050	1050	1050	1150	1150	1200	1200	1250	1250	1300	1300	1450	1450	1450	1600	1750
*Total weight, in pounds, of Boiler and Fittings as illustrated on opposite page	1655	1810	1975	2500	2580	2670	2750	3300	3500	3750	3960	4210	4410	4200	4450	4850	5100	5350	5800	6250
Weight of Flush End Boiler and Wall Brackets	970	1125	1400	1325	1400	1490	1580	2075	2175	2375	2575	2780	3000	2700	2950	3200	3450	3700	4000	4300
Weight, in pounds, of Full Front, Grates and other Fittings	800	800	800	1230	1230	1230	1230	1475	1475	1575	1675	1675	1675	1650	1700	1900	1900	1900	1900	2300
Total weight, in pounds, of Full Front Boiler and Fittings as illustrated on next page	1770	1900	2000	2555	2630	2720	2810	3550	3650	3950	4250	4455	4675	4350	4650	5100	5350	5600	5900	6600
Code Word for Boiler and Fittings as shown on opposite page	Regime	Region	Reign	Redhead	Relapse	Relent	Relic	Relish	Remand	Remorse	Remount	Renard	Rennet	Renown	Rent	Repast	Repeal	Repine	Replica	Repose
Code Word for Full Front Boiler as illustrated on next page	Reptile	Repulse	Repute	Requiem	Resin	Resort	Respite	Retina	Retort	Retreat	Reunion	Revenge	Reverie	Revolt	Rhubarb	Rhyme	Rhythm	Riband	Ribbon	Rice

*The width of grate surface in all cases is the same as the diameter of the boiler.

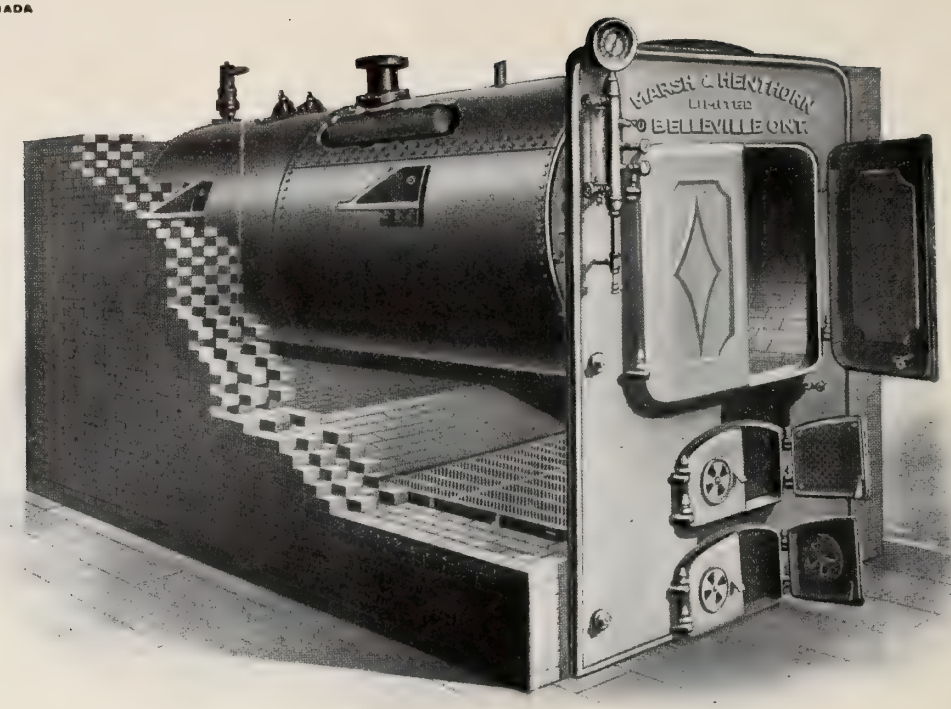
Unless otherwise specified we will ship all boilers on the above list with dome, with smokebox extension, and with half-front, as illustrated on the opposite page.

Although we mention in the above list the size of smokestack recommended to be used in connection with each boiler, we do not supply this stack except as an extra.

All the boilers listed above are designed for a working pressure of one hundred pounds. Boilers requiring a higher working pressure than this will be built to order only. The small illustrations on page 132 show some of these high pressure boilers.

MUSSENS LIMITED, MONTREAL
SALES AGENTS

MARSH & HENTHORN
LIMITED
BELLEVILLE
CANADA



RETURN TUBULAR BOILERS.

With Full Front, Dry Pipe, etc.

Our larger sized boilers, as listed on the page facing this, are usually supplied with a full front, and with either dry pipe or steam dome, as preferred by the customer. We make these in all sizes, although, owing to lack of space, we do not list them larger than one hundred horse power. We will be pleased to furnish specifications and quotations at any time to intending purchasers.

The two illustrations below show the methods of construction of our larger sized boilers. We make these for any required pressure from one hundred pounds up, and thoroughly guarantee all workmanship.

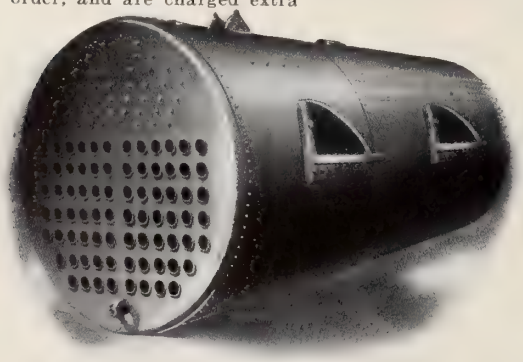
REGULAR FIXTURES SUPPLIED WITH FULL FRONT BOILERS, AS ILLUSTRATED ABOVE.

Cast iron full front, with tube doors, also double fire and ash pit doors, with liners for the fire doors, heavy dead plate and arch plate (if arch plate is to be used), grate bars and grate bar bearers, rear arch bars for supporting the brickwork, rear ash door and frame, safety valve, steam gauge, with cock and syphon, water column fitted to boiler, and with water gauge and gauge cocks, blow-off valve, also injector with globe valve, check valve, stop cock and injector piping, all as shown in the illustration above.

Anything called for and not in the above list will be charged as an extra.

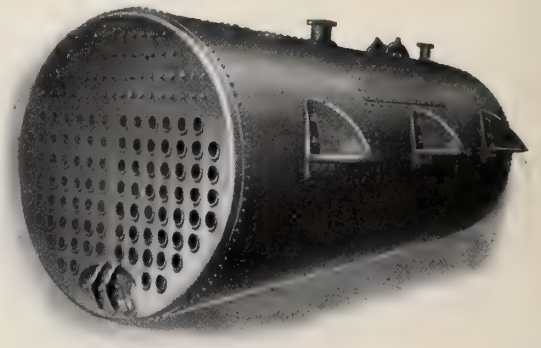
A smokestack is always charged as an extra.

Buckstays, or wall plates, and rollers, binding bars and rods, and anchor bolts are all subject to order, and are charged extra



Standard Stationary Return Tubular Boiler

With double strapped butt joints, double rivetted, and with gusset stays.



Standard Stationary Return Tubular Boiler

With double strapped butt joints, triple rivetted, with diagonal stays, and manhole in head.

Specifications of Return Tubular B(

With Dry Pipe, Full Front, and all Fitting

Horse Power, as usually rated	32	36	39	43	46	50	40	44	48	52	56	60	5
Diameter of Boiler....in inches	44	44	44	44	44	44	48	48	48	48	48	48	5
Length of Tubes....in feet	9	10	11	12	13	14	10	11	12	13	14	15	1
Number of 3 inch Tubes	46	46	46	46	46	46	52	52	52	52	52	52	6
Square feet of Heating Surface	388	429	471	513	555	597	484	531	578	625	672	719	64
Length of Grate*....in inches	36	36	36	42	42	48	36	42	42	48	48	54	4.
Diameter of Dome (if Dome is required).. "	22	22	22	22	22	22	24	24	24	24	24	24	2(
Height of Dome (if Dome is required) ... "	24	24	24	24	24	24	28	28	28	28	28	28	2
Thickness of Boiler Shell..... "	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/1
Thickness of Main Heads..... "	3/8	3/8	3/8	3/8	3/8	3/8	7/16	7/16	7/16	7/16	7/16	7/16	7/1
Thickness of Dome Shell (if Dome is required) "	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/1
Thickness of Dome Head (if Dome is required) "	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Diameter, in inches, of Smokestack recommended..	22	22	22	22	22	22	26	26	26	26	26	26	2(
Length, in feet, of Smokestack recommended	40	40	40	40	50	50	40	40	50	50	50	50	5(
Weight of Flush End Boiler and Wall Brackets, without Dome	3750	3975	4200	4375	4500	4800	4900	5300	5700	6100	6500	6900	63
Weight of Full Front, Grates and other Fittings, as illustrated	2200	2200	2200	2300	2300	2400	2250	2400	2400	2600	2600	2800	26
Total Weight of Boiler and Fittings, as illustrated on opposite page	5950	6175	6400	6675	6800	7200	7150	7700	8100	8700	9100	9700	89
Weight of Boiler and Britchen, as shown on p. 130	3950	4175	4400	4575	4700	5000	5325	5625	5950	6250	6550	7000	65
Weight of Half Front, Grates and other Fittings..	1760	1860	1860	1860	1860	2160	2060	2240	2200	2360	2360	2500	23
Weight of Half Front Boiler and Fittings, as illustrated on page 130	5710	6035	6260	6435	6560	7160	7385	7865	8150	8610	8910	9500	88
Code Word for Boiler and all Fittings, as shown on opposite page	Riches	Riddle	Rifle	Rigour	Rime	Riot	Ripple	Roan	Robin	Rocker	Rodent	Rogue	Romance
Code Word for Half Front Boiler and all Fittings, as shown on page 130	Rickets	Ridge	Rift	Rill	Ring	Riotous	Rissole	Roast	Robber	Rococo	Roe	Ronan	Romp

Roost, Rosett, Rouge, Rover, Royal, Rubric, Ruddle, Ruffle, Rum

*The width of Grate surface in all cases is the same as the diameter of the boiler.

Unless otherwise specified we will ship all boilers on the above list with dry pipe, as shown in the illustration, and without dome, and with full cast iron front. Domes, however, will be supplied to order whenever required, also half fronts, with smokebox extension.

Although we mention in the above list the size of smokestack recommended to be used in connection with each boiler, we do not supply this stack except as an extra.

All the boilers listed above are designed for a working pressure of one hundred pounds. Boilers requiring a higher working pressure than this will be built to order only. The small illustrations on page 132 show some of these high pressure boilers.

MUSSENS LIMITED, MONTREAL
SALES AGENTS

MARSH & HENTHORN
LIMITED
BELLEVILLE
CANADA

LOCOMOTIVE TYPE FIREBOX BOILERS.

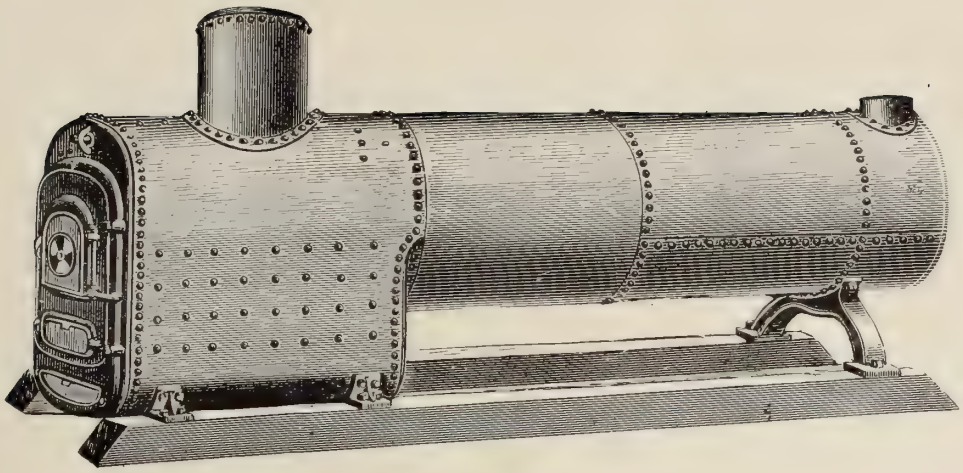
We make these Boilers in any size required by the customer. We make them all of the best open-hearth boiler plate, with large furnaces having ample grate surface, and a fusible plug in the crown sheet if required.

All our boilers are tested and inspected before shipment at 150 pounds hydraulic pressure.

Horse Power, as usually rated	25	30	35	40	50	60	70	80	90	100	110	125
Diameter of Boiler ....in inches	40	42	44	44	48	54	56	58	58	62	64	66
Length of Furnace, inside.... "	48	50	50	50	54	60	60	60	60	60	60	60
Width of Furnace, inside .... "	34	36	38	38	42	48	50	52	52	56	58	60
Height of Furnace above Grates.... "	33	34	36	36	40	44	44	48	48	50	52	58
Number of Tubes, (3 in. diameter).. "	34	40	44	44	54	60	66	76	76	90	100	108
Length of Tubes used....in feet	8	8	8½	10	10½	11	12	12	14	14	14	15
Thickness Shell and outside of Firebox. ins.	9/32	9/32	9/32	9/32	5/16	5/16	11/32	11/32	11/32	3/8	3/8	3/8
Thickness of Furnace Plate .... "	5/16	5/16	5/16	5/16	5/16	5/16	5/16	7/16	5/16	7/16	7/16	5/16
Thickness of Tube Sheets .... "	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	7/16
Diameter of Dome .... "	22	22	26	26	26	30	30	32	32	32	36	36
Height of Dome .... "	24	24	28	28	28	34	34	36	36	40	40	40
Diameter of Stack .... "	18	20	20	20	22	24	26	26	26	30	30	32
Length of Stack .... feet	24	24	30	36	36	36	40	40	50	50	50	50
Weight of Boiler .... about..	6300	6900	7600	8100	9000	11000	12800	14000	15000	16400	17200	18100
Weight of Boiler Fixtures .... "	1150	1250	1500	1500	1600	1850	2000	2150	2400	2600	2800	2900
Weight Boiler & Fixtures, complete about..	7450	8150	9000	9600	10600	12850	14800	16150	17400	19000	20000	21000
Code Word....	Label	Lard	Larder	Lapdog	Lariat	Lark	Larva	Lascar	Lash	Leash	Lasso	Latch

FIXTURES.

With a boiler ordered "complete" the following fixtures are sent: Grates, Steam Gauge, Water Gauge, Gauge Cocks, Safety Valve, Blow off Valve, Injector and Injector Valves and Piping.



PORTABLE WATER BOTTOM BOILERS.

This is the favorite Water Bottom style of Boiler for contractors' work. It is made of the best open-hearth boiler steel plate, and is thoroughly braced and stayed. All boilers 10 horse power and larger are double rivetted on the longitudinal seams.

SPECIFICATIONS.

Horse power, as usually rated	8	10	12	15	20	25	30	35	40	50	60
Diameter of boiler....in inches	28	30	32	32	34	36	40	40	40	44	48
Length of furnace (see note below).. "	36	38	38	44	52	52	60	60	60	64	64
Width of furnace. "	22	24	26	26	28	30	34	34	34	38	42
Height of furnace "	33	35	35	35	37	40	43	43	43	50	52
Number of tubes (3-inch diameter).	18	20	24	24	28	32	38	40	40	46	52
Length of tubes used....in feet.	6	7	6½	7	8	8½	8	9	10½	11½	12
Thickness Shell and outside of Firebox..ins.	¼	¼	¼	¼	¼	¼	9/32	9/32	9/32	5/16	5/16
Thickness of furnace plate, "	5/16	5/16	5/16	5/16	5/16	9/32	9/32	9/32	9/32	5/16	5/16
Thickness of tube sheets. "	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Diameter of Dome. "	14	16	18	18	20	20	22	22	22	22	26
Height of dome "	16	18	20	20	22	22	24	24	24	24	28
Diameter of stack "	14	14	16	16	16	18	20	20	20	22	22
Length of stack....in feet	20	20	20	20	24	24	30	35	40	40	50
Length of boiler over all, in feet.....about	11	12	11¾	13	14½	15	15	16	17½	19¼	20
Weight of boiler, on skids.....about	3150	3650	3900	4150	5100	5900	7000	7450	7950	9900	11300
Weight of boiler fixtures..... "	500	550	600	650	950	1000	1150	1250	1350	1500	1700
Weight of boiler and fixtures, complete, on skids.....about	3650	4200	4500	4800	6050	6900	8150	8700	9300	11400	13000
Weight of boiler and fixtures, complete on wheels,.....about	4100	4700	5000	5300	6600	7500	8700	9300	9900	12000	13700
Code Word, with fixtures, complete on skids	Lecture	Lather	Latin	Lattice	Laugh	Laundry	Laurel.	Lava	Lawn	Lawyer	Lawsuit

When a boiler is ordered "complete" the following fixtures are sent: Grates, Steam Gauge, Water Gauge, Gauge Cocks, Safety Valve, Blow off Valve, Injector and Injector Valves and Piping.

When this boiler is made with water front the furnace is about three inches shorter.

These boilers are all thoroughly inspected and tested, before shipment, to 150 pounds cold water pressure.

SMOKE STACKS.

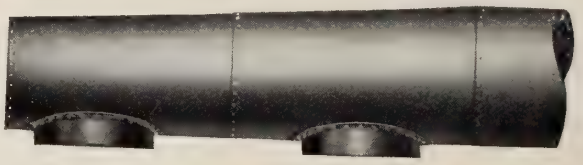
Our long experience in building all sorts of Smoke Stacks, Smoke Breechings, Smoke Conductor Pipes, Water Pipes, etc., together with the special machinery we possess for this purpose, enables us to fill orders promptly and at a reasonable price.

We shall be pleased to furnish estimates for steel stacks of any length, made of any thickess of material, and of any diameter, and with or without umbrella tops, guy bands, guy rods or wires, etc.

If desired, estimates will also be furnished for erecting.

SMOKE BREECHING FOR TWO STATIONARY BOILERS.
Made to order only, and to suit boilers of any capacity.

SMOKE PIPE, OR CONDUCTOR PIPE FOR TWO STATIONARY BOILERS.
Made to order only, and to suit any specifications.



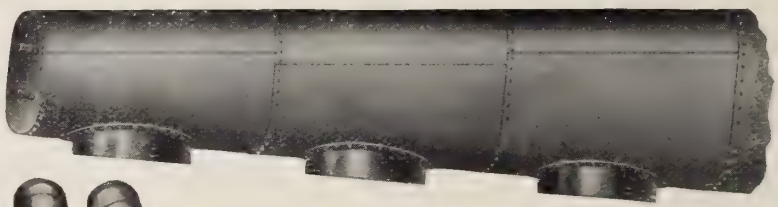
PRICE LIST OF SMOKE STACKS, PER MATERIAL FOOT.

Diameter of Stack in ins..	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
No. 16 steel per foot	1.00	1.05	1.18	1.23	1.30	1.36	1.50	1.60	1.74	1.90	2.00	2.20	2.40	2 55							
No. 14 steel per foot	1.15	1.25	1.38	1.38	1.55	1.61	1.75	1.90	2.04	2.20	2.30	2.50	2.70	2.90	3.15	3.34	3.52	3.80			
No. 12 steel per foot	1.40	1.50	1.58	1.68	1.85	1.96	2.20	2.35	2.24	2.75	2.85	3.05	3.30	3.50	3.80	1.04	4.27	4.50	4.87	5.12	5.32
No. 10 steel per foot	1.60	1.70	1.88	2.04	2.15	2.32	2.53	2.75	2.94	3 25	3.35	3 55	3.75	4.00	4.25	4.50	4.78	5 00	5.52	5.78	6.08

Write for discount off above prices.

SMOKE PIPE, OR CONDUCTOR PIPE, FOR THREE STATIONARY BOILERS.

Made to order only, and to suit any specifications.

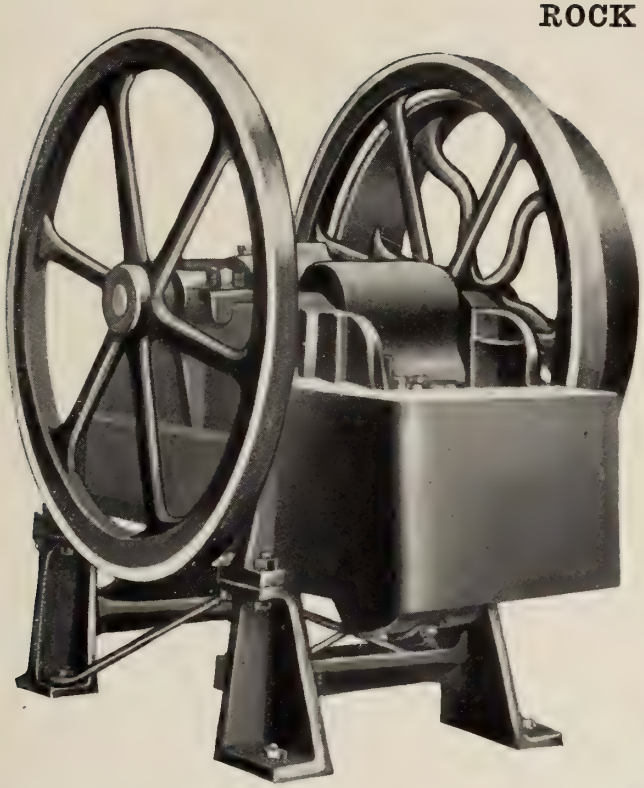


STEEL PIPES.

For Water Power Flumes, for Water Intakes, for Sewer Discharge, or for any other purpose.

We manufacture these rivetted steel pipes any diameter, any length, and of any thickness of material, and all in one piece, or in flanged sections, as shown in illustration, and will be glad to submit tenders on any specifications.

ROCK AND STONE CRUSHER.

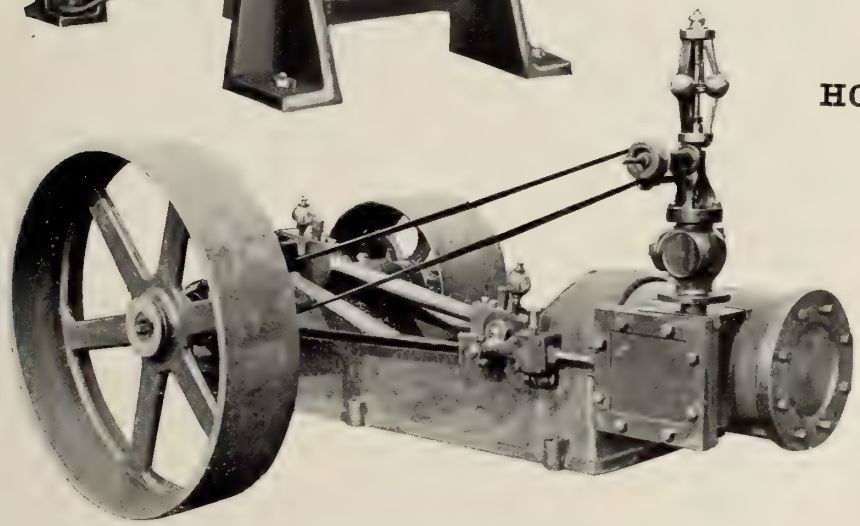


Opening, 9 x 15 inches.

Capacity, 80 to 100 Cubic Yards in Ten Hours.

This Crusher is of the swinging jaw type, and is a very heavy, strongly constructed machine, built to withstand the severe work it is intended for. It weighs about six tons complete with pulley and fly wheels. The opening at the top of the jaws is 9x15 in., which is the largest size stone the machine will take. The opening at the bottom of the jaws may be adjusted to deliver any size crushed rock that may be desired. The machine is supposed to run at about 250 revolutions per minute, and requires in the neighborhood of 12 horse power to drive it. The amount of stone this machine will handle depends on the speed it is run, the size of the opening at the bottom of the jaws, and the character of the stone, hard stone going through faster than sand stone. When the machine is run at its proper speed, with jaws set at 1½ inches, and kept supplied with stone, it will handle from 8 to 10 cubic yards per hour.

This Crusher is particularly valuable to contractors in preparing the material for concrete for large contracts.

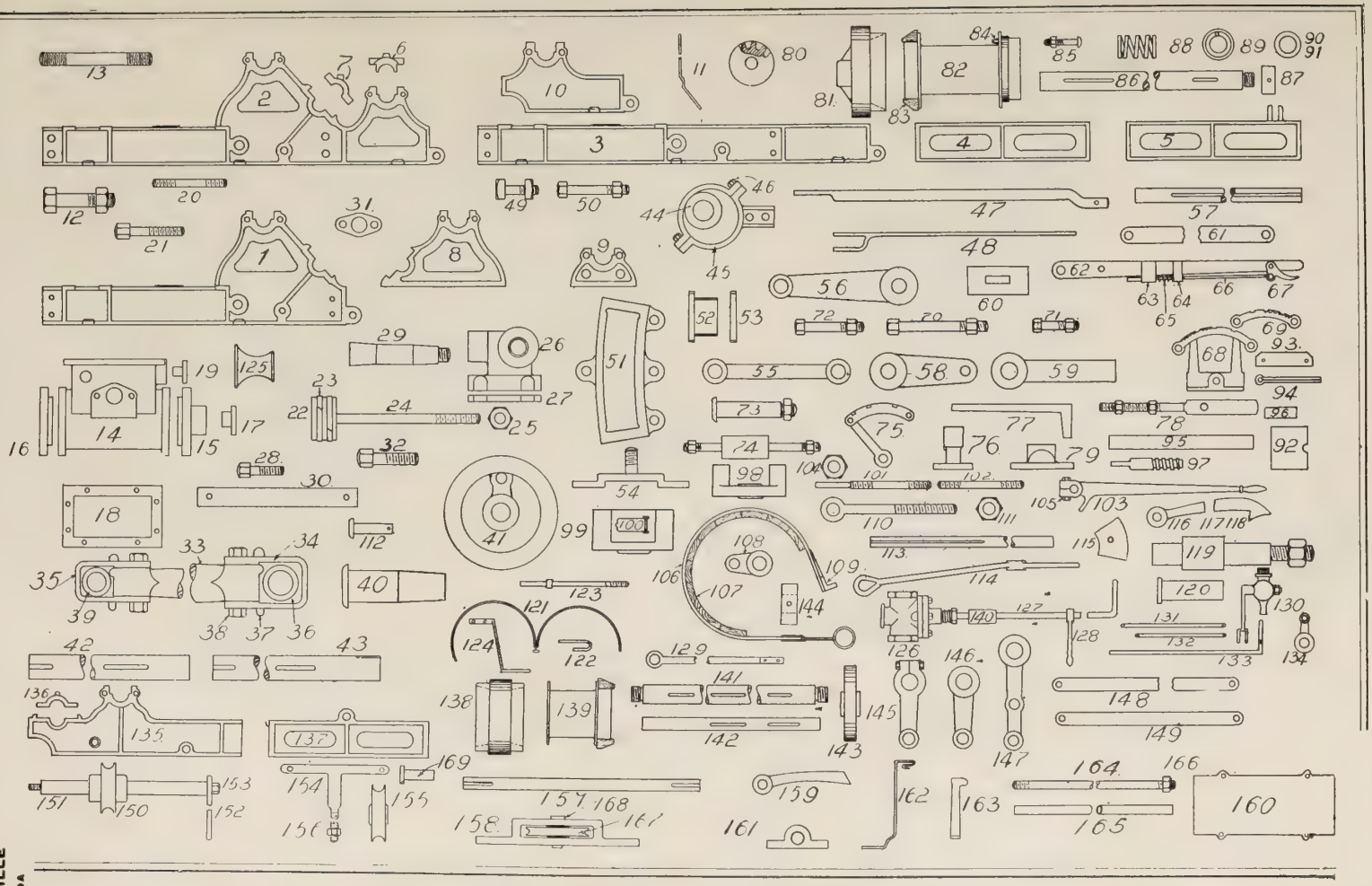


HORIZONTAL CENTRE CRANK ENGINE.

A strong, compact and reliable engine, made in a variety of sizes, to suit all the requirements of the average contractor.

Specifications of Standard Sizes.

Horse Power Usually Rated	Bore of Cylinder	Length of Stroke	Revolutions of Pulley per Minute	Approximate Shipping Weight	Code Word
8	6½ in.	8 in.	240	1200	Tabard
10	6¾ in.	10 in.	230	1350	Tableau
13	7 in.	12 in.	210	1500	Taboo
16	8 in.	12 in.	190	2000	Tadpole
20	9 in.	12 in.	190	2600	Talisman
25	10 in.	12 in.	190	2800	Tallow



Parts of Our Standard Hoisting Engines.

See List on opposite page.

MARSH & HENTHORN
LIMITED
BELLEVILLE
CANADA

MUSSENS LIMITED, MONTREAL
SALES AGENTS

LIST OF PARTS OF OUR STANDARD HOISTING ENGINES AND SWINGERS

As per Illustration on Opposite Page.

	Price
1. Single Drum one-piece Side Frame	
2. Double Drum, one-piece Side Frame	
3. Double Drum Side Frame, without Bearing	
4. Rear Girt	
5. Front Girt	
6. Flat Cap for Drum Shaft Bearing	
7. Bevel Cap for Crank Bearing	
8. Double Bracket or Bearing	
9. Single Bracket or Bearing	
10. Single Drum Extension Frame	
11. Throttle Valve Rod Standard	
12. Bolt for Frame and Girt	
13. Stud for Bearing Caps	
14. Steam Cylinder	
15. Front Cylinder Head	
16. Back Cylinder Head	
17. Piston Rod Gland	
18. Steam Chest Cover	
19. Steam Chest Gland	
20. Stud for Glands	
21. Cap Screw for Cylinder Heads and Covers	
22. Piston	
23. Piston Rings	
24. Piston Rods	
25. Piston Rod Nut	
26. Cross Head	
27. Cross Head Plate or Cover	
28. Cap Screw for Cross Head	
29. Cross Head Pin or Wrist Pin	
30. Cross Head Guide Bar	
31. Exhaust Pipe Flange	
32. Cap Screw for Guide Bar	
33. Connecting Rod	
34. Strap for large end of Connecting Rod	
35. Strap for small end of Connecting Rod	
36. Brass Bearing for large end of Connecting Rod	
37. Key for Connecting Rod	
38. Bolt for Connecting Rod	
39. Brass Bearing for small end of Connecting Rod	
40. Crank Pin	
41. Crank or Disc	
42. Crank Shaft for single cylinder engine	
43. Crank Shaft for double cylinder engine (State if engine is reversing or not)	
44 Eccentric Casting	
45. Eccentric Strap, complete	
46. Cap Screw for Eccentric Strap	
47. Eccentric Rod for non-reversing engine	
48. Eccentric Rod for reversing engine	
49. Bolt for Eccentric Strap and Rod	
50. Bolt for Eccentric Rod and Link	
51. Link	
52. Link Block (Brass)	
53. Link Block (Plate)	
54. Link Saddle	
55. Link Suspension Bar or Link Lifting Bar	
56. Rocker Arm, or Link Lifting Lever	
57. Reversing Shaft, or Rocker Shaft	
58. Short Reversing Lever	
59. Counterweight or Counterbalance Lever	
60. Counterweight	
61. Reversing Lever Draw Bar	
62. Reversing Quadrant Lever	
63. Larger Strap for Quadrant Lever	
64. Smaller Strap for Quadrant Lever	
65. Brass Spring for Quadrant Lever	
66. Latch Forging for Quadrant Lever	
67. Brass Grip or Handle for Quadrant Lever	
68. Quadrant Casting	
69. Quadrant Bar	
70. Bolt for Quadrant and Lever	
71. Bolt for Quadrant and Frame	
72. Bolt for Quadrant and Bar	
73. Pin for non-reversing Valve and Eccentric Rod	
74. Pin for reversing Valve and Eccentric Rod	
75. Sector for Reversing Lever, with Sector Brace	
76. Valve Rod Bracket	
77. Brass Gib or Slipper for Valve Rod Bracket	
78. Valve Rod and Nuts	
79. Slide Valve for Cylinder	
80. Pinion	
81. Gear with Cone Friction	
82. Drum	
83. Wood Friction Blocks	
84. U Bolt for Drum	
85 Wood Bolts for Drum and Friction Blocks	
86. Drum Shaft (state if Engine is reversing or not, also if shaft has spool or niggerhead, state if this is keyed on or loose)	
87. Nut for Drum Shaft	
88. Steel Spring for Drum	
89. Cast Iron Drum Spring Washer	
90. Brass Washer	
91. Fibre Washer	
92. Thrust Collar, or Drum Collar	
93. Thrust Gib	
94. Cotter Pin for Thrust Gib	
95. Thrust Pin, Hardened Steel	
96. Steel Point for Thrust Screw	
97. Thrust Screw	
98. Thrust Nut, old style	
99. Thrust Nut, self-oiling	
100. Hinged Cap for self-oiling Thrust Nut	
101. Thrust Nut Stud, long	
102. Thrust Nut Stud, short	
103. Thrust Lever	
104. Nut for Thrust Nut Stud	
105. Bolt for Thrust Lever	
106. Brake Band, complete	
107. Wood Blocks for Brake Band	
108. Brake Trip Casting	
109. Brake Band Heel Forging	

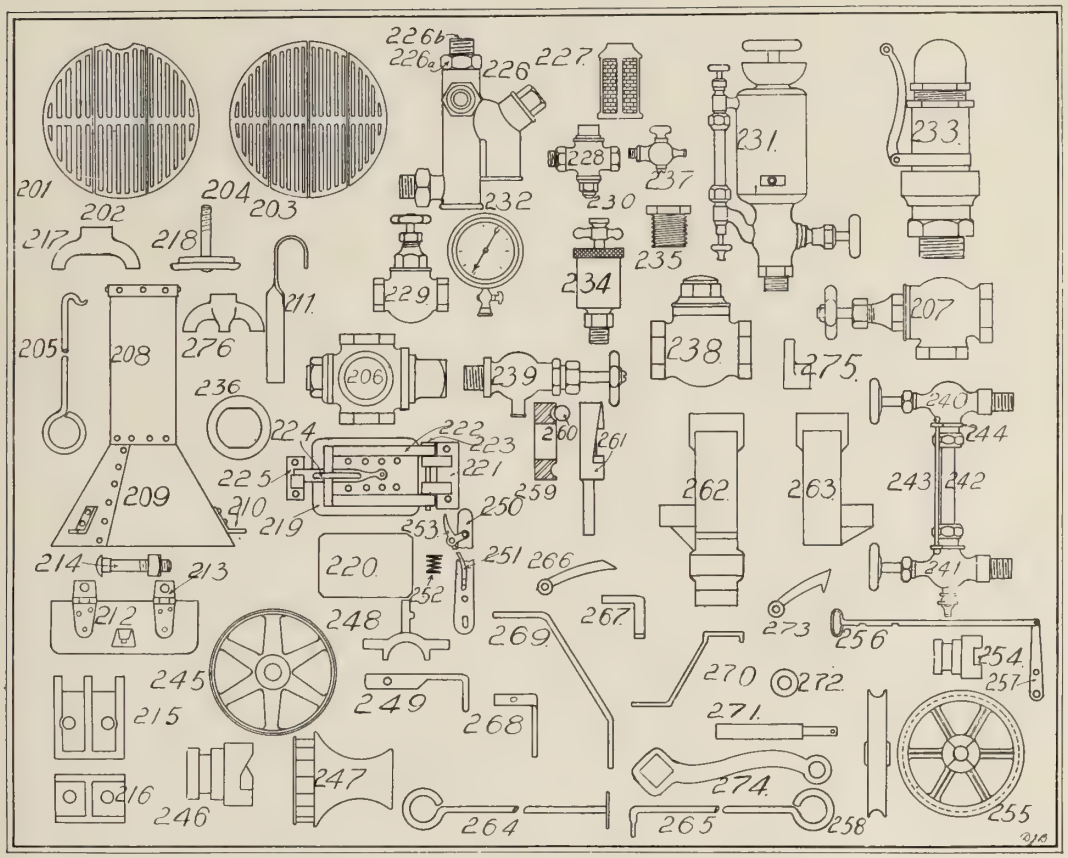
	Price
110. Eye Bolt for Brake Band	
111. Nut for Brake Band Eye Bolt	
112. Pin for Brake Band Eye Bolt	
113. Brake Shaft (state if Engine is reversing or not)	
114. Brake Lever, or Foot Lever	
115. Brake Weight Casting	
116. Dog for Rear Drum next Boiler	
117. Dog for Second Drum	
118. Dog for Third Drum, or front drum of a 3-drum machine	
119. Pin for Rear Dog	
120. Pin for Front Dog	
121. Gear Shield	
122. Rear Support for Gear Shield	
123. Centre Support for Gear Shield	
124. Front Support for Gear Shield	
125. Nigger Head, or Spool, or Winch Head	
126. Throttle Valve	
127. Throttle Valve Rod	
128. Throttle Valve Lever	
129. Boiler Brace	
130. Cylinder Drip Cock	
131. Long Link Bar for Drip Cock	
132. Short Link Bar for Drip Cock	
133. Drip Cock Lever and Rod	
134. Drip Cock Forged Handle	
135. Swinger Side Frame	
136. Cap for Swinger Drive Shaft Bearing	
137. Swinger Girt (state if Engine is reversing or not)	
138. Swinger Gear, with Double Friction	
139. Swinger Drum	
140. Throttle Rod Sleeve or Coupling	
141. Swinger Drum Shaft (state if Engine is reversing or not)	
142. Swinger Pinion Shaft (state if Engine is reversing or not)	
143. Intermediate Gear for Swinger	
144. Swinger Shaft Nut	
145. Swinger Thrust Screw Lever	
146. Short Lever or Arm for Swinger Rocker Shaft	
147. Long Lever or Arm for Swinger Rocker Shaft	
148. Swinger Quadrant Draw Bar	
149. Swinger Thrust Screw Lever Draw Bar	
150. Swinger Leader Sheave	
151. Swinger Leader Sheave Shaft (state if Engine is reversing or not)	
152. Swinger Leader Sheave Standard	
153. Nut for Swinger Leader Sheave Shaft	
154. Swinger Sheave Bracket, or forging	
155. Swinger Sheave	
156. Nut for Swinger Sheave Bracket	
157. Swinger Rocker Shaft (state if Engine is reversing or not, also if swinger is set in front or at side of Hoist)	
158. Bull Ring Guide Sheave Frame or Casting	
159. Straight Dog	
160. Quadrant Base Plate	
161. Outer Bearing, or Box, for Swinger Rocker Shaft	
162. Spring or Latch for Rear Dog	
163. Spring or Latch for Front Dog	
164. Stay Rod or Bolt, for Rear of Swinger (state if Engine is reversing or not)	
165. Pipe Separator for Stay Rod	
166. Nut for Swinger Stay Rod	
167. Bull Ring Guide Sheave	
168. Pin for Bull Ring Guide Sheave	
169. Pin for Swinger Sheave and Bracket	

When ordering repair parts for any of our Hoisting Engines or Swingers, please give, if possible, the shop number of the Engine, and order parts by both name and number from above list. The shop number of the Engine is stamped in several places at the boiler end of the machine. If this cannot be found, give the size of the cylinder, inside, the number of drums, whether engine is reversing or not, and any other information that will assist in selecting the part required.

BOILER FITTINGS AND EXTRA HOIST PARTS.

As Shown in Illustration on Opposite Page.

	Price
201. Side Grate Bar, left and right, for 3-piece Grate	
202. Centre Grate Bar for 3-piece Grate	
203. Centre Grate Bar for 4-piece Grate	
204. Side Grate Bar, left and right, for 4-piece Grate	
205. Handle for three-way Exhaust Cock	
206. Three-way Exhaust Cock	
207. Steam Angle Valve	
208. Smokestack, complete	
209. Hood for Smokestack	
210. Forged Lugs for Smokestack	
211. Exhaust Pipe Bracket or Stay	
212. Damper Door	
213. Hinge for Damper Door	
214. Bolt for Damper Door	
215. Boiler Block for Reversing Engine	
216. Boiler Block for Non-reversing Engine	
217. Handhole Bale	
218. Handhole Cover	
219. Fire Door	
220. Fire Door, Baffle Plate or Liner	
221. Fire Door Hinge Casting	
222. Fire Door Hinge Forging	
223. Pin for Fire Door Hinge	
224. Fire Door Latch Forging	
225. Fire Door Latch Casting	
226. Injector	
226a. Injector Coupling Nut	
226b. Injector Tailpipe	
227. Injector Strainer	
228. Injector Stop Cock	
229. Injector Globe Valve	
230. Blow-off Cock	
231. Sight Feed Lubricator	
232. Steam Gauge	



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As Illustrated Above.

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233. Pop Safety Valve	
234. Grease Cup	
235. Fusible Plug	
236. Dsc for Globe or Angle Valve	
237. Pet Cock for Steam Chest and Steam Gauge	
238. Check Valve for Injector	
239. Try Cocks, or Gauge Cock	
240. Upper Water Gauge Cock	
241. Lower Water Gauge Cock	
242. Water Gauge Glass	
243. Rod for Water Gauge Cocks	
244. Plate for Water Gauge Rods	
245. Pulley for Belt Hoist, etc.	
246. Spiral Jaw Clutch	
247. Independent Niggerhead	
248. Special Cap for Drum Shaft Bearing for Shifting Clutch	
249. Clutch Fork for Independent Niggerhead or Sheave	
250. Lever for Shifting Clutch	
251. Clutch Lever Latch	
252. Spring for Clutch Lever	
253. Brass Grip for Lever	
254. Square Jaw Clutch	
255. Large Sheave, with Square Jaw Clutch	
256. Clutch Lever Rod for Sheave	
257. Clutch Lever for Sheave	
258. Large Sheave without Clutch	
259. Ball Bearing Thrust Collar or Ball Race	
260. Ball for Ball Bearing Thrust	
261. Cam for Ball Bearing Thrust	
262. Double Bracket with Extended Hub for Nggerhead Dog	
263. Single Bracket with Extended Hub for Niggerhead Dog	
264. Fire Hoe or Rake	
265. Fire Hook, or Poker	
266. Straight Pawl, for Dog, or Niggerhead	
267. Rest for Niggerhead Pawl	
268. Anchor Bracket for Ball Bearing Cam	
269. Lever for Ball Bearing Thrust	
270. Brake Band Stay or Support	
271. Niggerhead Dog Pin	
272. Washer for Dog Pin	
273. Bent Dog or Pawl, for Niggerhead	
274. Lever or Three-way Exhaust Cock	
275. Cast Iron Butt for Reversing Lever	
276. Large Handhole Bale	

CODE WORDS FOR NUMBERS OR QUANTITIES AND PRICES.

	Numbers	Dollars		Numbers	Dollars		Numbers	Dollars
1	Sabbath	Broadsword	51	Saying	Buoyancy	150	Seclusion	Coolheaded
2	Sabine	Brogue	52	Scion	Burden	200	Secrecy	Coolness
3	Sacerdotal	Broidery	53	Scoffer	Burdock	250	Secular	Cooperate
4	Sackcloth	Brokage	54	Scoffing	Bureau	300	Sedately	Copartner
5	Sacred	Broken	55	Scollop	Burglar	350	Sedentary	Copernican
6	Saddlebag	Bronchial	56	Scorching	Burlesque	400	Seduce	Copious
7	Sadiron	Brooch	57	Scornful	Burnish	450	Seedcake	Copperhead
8	Safety	Brooding	58	Scorpion	Buskin	500	Seeker	Coppernose
9	Sagacity	Brooklet	59	Scotchman	Busybody	550	Signet	Coppice
10	Sagitta	Broomstaff	60	Scotfree	Buttercup	600	Vanity	Copybook
11	Sagepalm	Broomstick	61	Scoundrel	Butterfly	650	Vannage	Copywright
12	Sailmaker	Brothel	62	Scourge	Buttermilk	700	Vantard	Coquetry
13	Saintlike	Broughan.	63	Scramble	Butterwort	750	Vapor	Coquettish
14	Salivary	Browbeat	64	Scrapbook	Buttock	800	Varnish	Coraltree
15	Sallow	Brownbill	65	Scrawny	Buttonhole	850	Varcose	Cordial
16	Saltcellar	Browse	66	Screamy	Buttress	900	Varegin	Corduroy
17	Saltwater	Bruin	67	Screechowl	Buzzard	950	Varenne	Cordwood
18	Salubrious	Bruise	68	Scribbler	Bygones	1000	Variant	Corkscrew
19	Salutary	Brutality	69	Scrimmage	Bylaw	1100	Variety	Cormorant
20	Salutation	Bubble	70	Scripture	Byplay	1200	Varlope	Corncutter
21	Sampan	Buccaneer	71	Scrivener	Bystander	1300	Vary	Cornice
22	Sanctify	Buckler	72	Scrofula	Bystreet	1400	Vascule	Corollary
23	Sanctuary	Buckskin	73	Scrutiny	Byword	1500	Vassal	Coronation
24	Sandalwood	Buckwheat	74	Scudding	Contented	1600	Vat	Coronet
25	Sandflea	Buddhism	75	Scuffle	Contention	1700	Vatican	Corpse
26	Sandwich	Budget	76	Scullery	Contiguous	1800	Vaurien	Corpuscle
27	Sangfroid	Buffoon	77	Sculpin	Continuity	1900	Vedette	Corridor
28	Sanitarium	Bugaboo	78	Sculpture	Contradict	2000	Vehicle	Corrigible
29	Sanity	Bugbear	79	Seabank	Contralto	2500	Veinous	Corrode
30	Sapling	Buglehorn	80	Seabeach	Contrary	3000	Vellum	Corruption
31	Sapper	Bugle	81	Seabreeze	Contrast	4000	Vendor	Corsage
32	Sapphire	Bulbul	82	Seacoast	Contribute	5000	Veneer	Corsair
33	Sapsucker	Bulkhead	83	Seadog	Contrite	6000	Venery	Corset
34	Sarcastic	Bullcalf	84	Seafarer	Control	7000	Venge	Cosine
35	Sassafras	Bulldog	85	Seafight	Controvert	8000	Venom	Cosmetic
36	Satchel	Bullface	86	Seagirt	Contumely	9000	Vent	Cossack
37	Satellites	Bullfight	87	Seagull	Conundrum	10000	Ventail	Costive
38	Satiate	Bullfrog	88	Seahorse	Convolesce	15000	Venule	Costume
39	Satirist	Bullish	89	Seamew	Convenient	20000	Verax	Cotangent
40	Satisfy	Bullock	90	Seamless	Convent	25000	Verdure	Cottage
41	Saturate	Bulrush	91	Seamoss	Converge	30000	Vergil	Cottonwood
42	Saturn	Bulwark	92	Seaport	Conversant	35000	Verify	Cotyledon
43	Saucepan	Bumblebee	93	Seariver	Conversely	40000	Vermin	Cougar
44	Saucily	Bumpkin	94	Seasalt	Conveyance	45000	Vermont	Council
45	Sauerkraut	Bumptious	95	Seashore	Converse	50000	Version	Counsellor
46	Saurian	Bungalow	96	Seasick	Convivial	60000	Verso	Counteract
47	Savage	Bungler	97	Seawall	Convocate	70000	Vertigo	Counter
48	Savant	Bunion	98	Seaweed	Convoy	80000	Verb	Coupon
49	Sawdust	Bunker	99	Seawolf	Convulse	90000	Verbose	Courage
50	Sawfish	Bunting	100	Seaworthy	Convulsion	100000	Verdict	Courtbred

CODE WORDS FOR FRACTIONS.

1-16	Courtship	5-16	Cracker	9-16	Crevasse	13-16	Crossbill
1-8	Covetous	3-8	Cramp	5-8	Crimson	7-8	Crosspatch
3-16	Cowcatcher	7-16	Crawfish	11-16	Cripple	15-16	Crowd
1-4	Coxswain	1-2	Cremation	3-4	Croaker		

Use freely the Codes on this page and the page opposite. They will save you money and time. By their use, in conjunction with the Code Words for the various machines, a lengthy message can be condensed into a very short telegram. It is quick er than the mail, and costs but little more. Try it.

ABRIDGED TELEGRAPHIC CODE.

General Correspondence.

Sable	Answer by telegram at once.
Sachet	Answer by first mail with full particulars.
Saddle	Have you answered our letter of the.....?
Sadly	Have you answered our telegram of the.....?
Sadness	In reply to your letter of.....
Sago	In reply to your telegram of today.
Sailor	Referring to your letter of.....
Saint	Referring to our letter of.....
Salad	Referring to our telegram of.....
Slang	Did you receive our letter of.....?
Slash	What are you doing about.....?
Slattern	What do you recommend for the purpose?
Slaughter	Can you send your representative?
Slave	Telegram unintelligible. Send clearer message.
Sledge	Direct all telegrams to.....
Sleep	We are sending full details by mail.
Sleigh	Necessary information is contained in our letter of the.....
Sleuth	Necessary instructions are contained in our letter of the.....
Slogan	Have not received your letter of.....
Sloop	We cannot answer satisfactorily today.
Sloth	Direct all letters to.....
Slouch	Must have quick reply. We are afraid it will be too late.
Sloven	The matter is urgent. We must know at once.
Slug	Information received is not complete enough.
Sluggard	Information received is not sufficiently clear.
Slumber	Instructions are not sufficiently clear.
Slush	We did not receive your enclosure referred to.
Smack	As per your instructions.
Smatter	We recommend for the purpose.
Smile	What do you recommend for the purpose.
Smirk	Use your own judgment.
Smock	Try to obtain locally.
Smoke	Owing to absence of.....
Smother	We have an enquiry for.....
Smudge	We are sending our representative.
Smuggler	Is (are) asking for tenders.
Snack	Tenders will be received up to.....
Snaffle	Please send a complete list of.....
Snag	Spare no efforts to.....
Snail	Otherwise will be too late.
Snake	Boiler to be built to Western specifications.
Shekel	If ordered at once.

Shipments, Freights, Customs, Etc.

Shade	Advise by telegram when you will ship.
Shadow	After receipt of order.
Shag	Do not enter the order if you cannot ship in ..... days.
Shale	Expedite shipment as much as possible.
Sham	Follow shipment with wire tracer.
Shampoo	Freight rate in carload from Belleville to..... .... is.
Shanty	Freight rate in less than carload from Belleville to..... is.
Shark	Freight must be prepaid.
Shaw	Give us the correct shipping instructions.
Sheath	Have you shipped.....?
Sheep	Have you special routing for your order for..... .....?
Shekel	If ordered at once.
Shelf	If you can ship at once enter our order for.....
Sherbet	Ship as soon as possible.
Sheriff	Ship by first express.
Sherry	Ship by first freight.
Shin	State quickest time shipment can be made.
Shingle	Unless shipment is made at once the order will be cancelled.
Shoddy	We are tracing shipment vigorously.
Shower	We can make shipment by the.....
Shrimp	We cannot promise shipment before the.....
Shroud	We can ship from stock if ordered at once.
Shrub	We can ship in.....days.
Shuck	We can ship in.....weeks.
Snare	We can ship today.
Sneeze	We can ship tomorrow.
Snipe	We can ship the day after tomorrow.
Snob	We can ship early this week.
Snooze	We can ship end of this week.
Snore	We can ship early next week.
Snow	We can ship in approximately ten days.
Snowball	We can ship in approximately one week.
Snowdrop	We can ship in approximately two weeks.
Snowdrift	We can ship in approximately three weeks.
Snowshoe	We can ship in approximately four weeks.
Snuff	We cannot guarantee shipment in less than.....
Shuffle	We expect to ship.....
Shudder	We made shipment on the.....
Sober	Delivery to commence.....
Social	Delivery to be completed by.....
Sickle	We are rushing work on.....as much as possible.
Signal	Delivery promised subject to orders that may be placed ahead of yours.
Signet	When did you ship?
Silk	When will you ship?
Shutter	What is the best rate of freight in carloads from Belleville to.....?
Shuttle	What is the best freight rate in less than carload lots from Belleville to.....?
Society	Ship by boat.
Soda	Ship the following by express, the balance by freight.
Sodium	Ship immediately all you possibly can.
Sofa	Ship part at once, remainder to follow.
Soldier	Ship by cheapest route.
Solfa	Can you ship at once?
Solitaire	Have shipment followed by tracer.
Solo	Telegraph car initials and car number.
Solution	Are shipping part at once, remainder to follow.
Sombrero	Goods ready to ship.
Sonata	In order to avoid delay.
Songster	Owing to delay through.....
Sonnet	Shipment delayed in consequence of.....
Soprano	Delay will last about.....
Sorrel	Shipment made on .....car number.....

Prices, Terms, Enquiries and Orders.

Sardine	Enter our order for.
Sash	Terms, cash in thirty days from date of shipment.
Sateen	Have you sold?
Satire	We have sold for immediate shipment.
Saxon	At what price and how soon can you ship?
Scab	Estimate cost and telegraph your best selling price on.....
Scald	Is the price quoted net or list?
Scalp	The extra cost to make the change on.... is $.....
Scamp	The price is as low as we can consistently make it.
Scarf	The price named is for the machine regular as per catalogue.
Souvenir	The price quoted is subject to your usual agent's discount.
Sceptre	The price quoted for..... should be $.... Please correct.
Scholar	We cannot estimate and send price before
School	We have an enquiry from..... Shall we quote direct?
Scolder	We have an enquiry from..... Can you send your salesman?
Scone	What will be the cost for next size larger boiler on.....?
Scorch	What will be the extra cost for.... on....
Slab	The boiler is to be on a separate base.
Slander	A larger boiler cannot be placed on th base of.....
Spangle	Does your quotation cover.....?
Spaniard	What are your terms?
Spaniel	We quote you on goods specified....
Spanish	Our quotation covers.....
Sparrow	Price asked is too high.
Spartan	To be included without extra charge.
Spatula	F.O.B. Factory.
Speaker	Book the following order for shipment as quickly as possible.
Spear	You may enter our order if you can ship by.....
Specialist	Goods must be consigned to order.
Specie	We have received the order for.....
Spectacle	Cancel order if not already shipped
Spectrum	Add to our order of the.....
Sphinx	How far have you proceeded with order?
Spice	The engine specified will not meet requirements.
Spider	The engine specified is not adapted for the work.
Splint	We recommend for the duty specified.

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ERRATA

Page 22 change Eclipse to Eclip
" 38 " Hayfield to Hay
" 42 " Encore to Encrier
" 48 " Effigy to Effi
" 58 " Echo to Earwig
" 76 " Baccar to Bacca
" 78 " Bacon to Beacon
" 78 " Beck to Beckon
" 80 " Bardic to Bard
" 80 " Basinet to Basin
" 90 " Damask to Dama (Derrick No. 16)
" 102 " Feat to Fea (Cut No. 96)
" 106 " Aigret to Agret
" 108 " Acorn to Aco
" 95 Cut 26 omit words "And Mast Cap"
" 2 Code Index change 141 to 142

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